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THE PSYCHOLOGICAL BULLETIN

STUDIES ON THE EIDETIC TYPE AND ON EIDETIC IMAGERY

BY HEINRICH KLÜVER¹
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The discovery of the eidetic disposition undoubtedly justifies a critical evaluation of the results obtained in this new field of research. In such an analysis a sharp distinction must be drawn between phenomenological and genetic questions: (1) How are we to characterize and where are we to place eidetic phenomena from the *descriptive* standpoint? (2) What is the *genesis* of these phenomena? Furthermore, it is necessary to analyze the work done by considering: (1) What are the *methods* used? (2) What bearing have the results on *different fields of research*? A critical analysis of this kind is not attempted here; only a short summary of the studies published during the last ten years will be given.

In an "eidetic" (Gk. *eidos*) individual subjective (visual, auditory, etc.) phenomena assume a perceptual character. Such "images of hallucinatory clearness" (88) have been called *Anschauungsbilder* (eidetic images). At the same time, it is implied that the eidetic individual is a "normal and healthy" person. In other words, most hallucinations, pseudohallucinations, and related phenomena are not to be referred to as eidetic phenomena. In the following, we are chiefly concerned with *visual* eidetic images (EI). "The eidetic image is a subjective visual phenomenon which is found in a large number of young people, but much less frequently in adults. If, for instance, a person with eidetic imagery is asked to look attentively at an object—regardless of whether it be of two or three dimensions—this person sees the object again, either when he closes his eyes or looks at a ground which serves as a background for the image" (34). He "sees" it—"in the literal sense" of the word (42)—either

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immediately or after a considerable lapse of time. This "seeing" something in the *Wahrnehmungsraum* is accompanied by a certain tension and pressure in the peripheral visual apparatus (89). Urbantschitsch (188) emphasizes the fact that the "ordinary visual memory-image" is merely imagined, whereas the "perceptual memory-image," the EI, is "seen." As regards color and form, the EI may differ from the stimulus object in certain characteristic ways. In some cases the EI has the color of the stimulus object, in other cases the complementary or some other color appears. With respect to form, the EI may be almost photographic in fidelity. These remarks may suffice to characterize the EI in a preliminary way.

E. R. Jaensch deserves the credit of having attacked the field of visual EI systematically. He was unable to accept the view that EI were necessarily pathological, and, in 1909 (39), he pointed out that the investigation of EI might become of central importance for general psychology. In 1917, O. Kroh discovered that visual EI were frequently found in normal children. This discovery was the point of departure for elaborate researches carried on since 1917 in the Marburg Institute for Psychology. Viewing these investigations as a whole, it becomes apparent that this research has developed along two different lines. There is no doubt that E. R. Jaensch is right in assuming that investigations on eidetic *imagery* and investigations on the eidetic *type* are two different things. On the one hand, experimental work is concerned with the determination of the characteristics and the behavior of EI; on the other hand, with the individual who happens to possess EI. This implies that in the first group of investigations the phenomenology of the appearances is of prime importance, whereas in the second group genetic questions are in the foreground. The examination of the studies published shows, however, that in actual experimentation these two aspects are not always sharply separated. We shall consider: I. Studies on eidetic imagery; II. Studies on certain psychophysical types; III. Some studies on subjective visual phenomena in general.

I

A. In 1917, a preliminary report on the results obtained in investigations on EI was given in Marburg (41). At the Seventh Congress for Experimental Psychology in 1921, Jaensch (45) demonstrated some features of EI by giving certain tests to an eidetic child during the meeting. From the very beginning the Marburg investigators point out that EI are not identical with after-images (AI) or memory-images (MI). On the other hand, EI are in certain characteristic ways related to AI and MI. A comparison is made

between EI, AI, and MI concerning localization, persistence, "weight," clearness, color, the conditions of arousal and disappearance, the degree of "flexibility," the degree of "coherence," the relation to distracting stimuli, etc., and the conclusion is drawn that AI, EI, and MI form three levels of memory (*Gedächtnisstufen*) the lowest of which is the AI and the highest of which is the MI (8). Psychologically, it is not justifiable to use the term "memory," since we can experimentally distinguish "memories": a memory of AI, EI, and MI. The unity of memory which one may assume *teleologically* does not exist *psychologically*. This does not mean as Busse points out (8) that the three levels are sharply separated from each other; in fact, a "hierarchy" of levels is assumed. These three "steps in a continuum" are, however, considered sufficiently distinct as to warrant the expectation that their experimental comparison will throw light on many hitherto insufficiently investigated mechanisms of our "intellectual life." As regards the conditions of arousal, Busse stresses the importance of three factors: (1) the time of exposure; (2) the mode of fixation (rigid fixation or just "looking at" the stimulus object); (3) the intention of the subject as to what to "see" after the removal of the stimulus object. Busse used the following periods of exposure: MI, 5 sec., EI, 15 or 20 sec., AI, 40 sec. In the case of AI rigid fixation was required. The author found that in many cases a presentation of a few seconds was sufficient to elicit persistent EI. Only one of her subjects had complementary EI. The phenomena were investigated in the following order: MI, EI, AI. Busse's experiments show that the objects of perception influence AI, EI, and MI in various ways. They also show that EI influence perceptual objects, that for instance certain phenomena of assimilation as to form, distance, etc., take place between EI and the objects of visual perception. Such experimentally demonstrated facts are used to support the theory that EI play an important rôle in building up our perceptual world. E. R. Jaensch (46) commenting on Busse's study tries to explain why the EI measured at a distance equal to the distance of exposure was frequently larger than the stimulus object. He explains this deviation by reference to a T_E (epileptotetanoid)-constitution of the subjects in which macropsia is found. E. Gottheil (23) starts from the fact that the methods used for the determination of EI fail to discover eidetic imagery in certain children. Accepting the hypothesis that the "eidetic phase" represents a stage of normal development, she devises methods for the detection of "latent" eidetic imagery. Using 18 non-eidetic pupils, age twelve to seventeen and a half years, as subjects, she examined the size of

AI and MI, the influence of an inhomogeneous background on AI and MI, the influence of the position of the head on AI, the phenomenal appearance of AI and MI, and the possibility of a color mixture in projecting an MI on a real object. The result was that the AI and MI of most individuals of this age showed a behavior which is interpreted as "latent" eidetic imagery. To illustrate: Gottheil found that Emmert's law (13, 79, p. 186) held for non-eidetic adults—18 subjects; age twenty-two to twenty-five years; time of exposure, 5–30 sec. In subjects of the age from twelve to seventeen and a half, the values to be expected on the basis of Emmert's law were not found. The size of AI was about the same as that of EI. AI of this kind are considered as "rudimentary" EI. E. R. Jaensch and his brother W. Jaensch (68) report on an investigation concerning the presence of EI in a class of 38 pupils in a high school in Marburg. The average age of these boys was 12.35 years. Five cases were entirely negative. It is suggested, however, that there might be individual differences as to the time when the EI disappear. Six "degrees" of EI are distinguished. Gösler (21) studied the behavior of MI, EI, and AI if observed with open eyes in the *Wahrnehmungsraum*. He used 21 eidetic individuals (2 adults and 19 pupils of the Marburg high schools). The relation of MI, EI, and AI to external objects was examined. The phenomena were studied on a homogeneous background, on a background tilted to the right or left, and on a curved surface. The degree to which the size of MI, EI, and AI were influenced by the objects in the field of vision was determined, and the influence of the color and distance of these objects was investigated. Gösler concludes on the basis of his experimental findings that MI, EI, and AI have different degrees of "coherence" with "perceptual data." The coherence with external objects is most pronounced in AI and less pronounced in MI. The EI assume an intermediate position. Krellenberg (83) speaks of a "unitary type" (*Einheitstypus*) if under experimental conditions AI, EI, and MI do not differ in behavior. In the case of eidetic individuals of this type negative AI cannot be produced at all; only EI in natural colors arise. Likewise, it is not possible to produce pure MI since they turn at once into EI. Krellenberg considers the EI to be the "undifferentiated unity" of all memory-levels. In certain cases (T-type of W. Jaensch) a "disintegration" of this unitary phase can be brought about through treatment with calcium. It is reported that after such treatment negative AI and MI, which do not pass over into EI, appear for the first time. The author also attempts an experimental analysis of the so-called "eidetic state,"

meaning the state in which EI are produced and observed by the subject. He found that there is nothing peculiar about this state in "unitary" cases. It is, so to speak, for them the "normal" state. In "ordinary" eidetic individuals, however, definite changes in attitude, in size of the field of vision, etc., may take place. EI preserve the characteristics of the unitary phase most completely if they represent meaningful and interesting objects. In individuals in whom eidetic imagery is gradually disappearing EI of such objects still appear in natural colors, whereas uninteresting objects such as letters, squares, etc., produce complementary EI. It is to be noted that such complementary EI may still reproduce the form but not the color and the tri-dimensional character of the stimuli correctly. Jaensch (62) points out that in general EI do not retain all characteristics of the original impressions and that some stimuli cannot be revived at all in EI. There is a process of "selection." A student of botany and zoölogy for instance may be able to produce detailed and vivid EI of objects related to botany; his EI of zoölogical objects, however, are indistinct and fluctuating. It is the strong interest in the one subject and the lack of interest in the other which is considered responsible for this selection ("philotropic" tendency). Some individuals tend to revive beautiful and pleasant objects in their EI; unpleasant objects drop out or are modified or "idealized" ("kalotropic" tendency). In some cases, only figures, drawings, pictures, in short, *objects* of some kind, are represented in EI whereas uniformly colored squares for instance cannot be eidetically reproduced ("ontotropic" selection). Very frequently, however, EI of uniformly colored squares, circles, etc., are complementary EI, while figures can be revived in EI with the colors of the stimulus object (positive EI). Jaensch admits that there are difficulties in demonstrating the effects of selective processes in individuals who have nothing but complementary EI, the reason being that complementary EI are comparable to AI in that their duration and distinctness is chiefly dependent on "physiological-optical conditions." But even in such cases selective processes are operative since in affectively toned situations spontaneous positive EI appear.

B. The Marburg investigators try in a large number of studies to solve problems of normal perception from the genetic angle by studying the EI of children. Jaensch (42, 67) shows that the laboratory methods available for the study of visual perception are applicable to eidetic phenomena. He considers that the objections raised to Urbantschitsch's experimental analysis of EI do not hold for the Marburg material. The irregular and unpredictable behavior

of EI and the influence of "apsychonomic" factors (90) as observed in Vienna are according to Jaensch an exception to the rule in Marburg. Jaensch explains how reliable results in this field of research can be secured in spite of the fact that the subjects are children and, furthermore, that EI cannot be interpreted as products of suggestion. An experimental analysis of the "localization" of EI is attempted by Jaensch and Reich (69, 38). Previous observations on the localization of EI with open or closed eyes, during fixation and during movements of the eye, are utilized. In the experimental work an attempt is made to find a solution to some "problems of the normal perception of depth" through an analysis of the so-called "Hering-Hillebrandsche Horopterabweichung" in eidetic vision. After comparing the results with observations on the same phenomenon in normal vision, using eidetic and non-eidetic children and adults as subjects, the conclusion is drawn that the explanation which holds for eidetic vision holds also for "normal average adults." The authors explain their data on the basis of antagonistic processes and shifts of attention. Kröncke (85) finds that the same explanation is applicable to his data obtained from non-eidetic adults using 4-7 threads instead of 3, as used by Hering, Helmholtz, Jaensch and Reich. In connection with this study the value of nativistic theories in the field of space perception is considered (44). Jaensch discusses a large number of important observations on "spatial displacements" in EI (47). Problems dealt with by Stern in 1909 (101) are investigated here from a new angle. The conditions which favor and inhibit "spontaneous" displacements in EI, the importance of attentional factors, the relation to mirror-script, to symmetry and to the findings in the above-mentioned studies (69, 85) are discussed. It is stated that displacements of objects of normal perception also occur. Jaensch believes that spatial displacements in EI are of considerable importance in the development of thinking. He tries to demonstrate the preparatory function of these displacements for thought by showing their importance in "thought-experiments" and in "acts of recognition." He seeks to show that they are of equal importance in our "actions." Movements of objects towards affectively toned "goals" could be observed. Jaensch relates his findings on displacements to Köhler's observations on chimpanzees. (Cf. 92, 93). In general the studies on EI conducted with the view to throw light on problems of normal perception justify, as Jaensch thinks (48), the conclusion that the same laws hold for eidetic phenomena as for phenomena of normal perception; the laws for the two groups of phenomena are only "quantita-

tively different." Starting from the assumption that "the eidetic phase is to a certain extent a phase of normal development" (48) the question is raised whether it is merely a stage in the ontogenetic development. Jaensch thinks it highly probable that in prehistoric periods and in primitive races EI in adults have been more frequent (49). It is undoubtedly of considerable interest to compare the findings on EI with the reports on the characteristics of visual perception and memory in primitives and to analyze primitive art and language from this angle. The so-called "inner EI" are considered with reference to Lévy-Bruhl's "mystic participation." Freiling and Jaensch in their discussion of "the structure of space perceptions" (18) point out that "the rôle of anatomico-physiological conditions" is of slight importance as compared with the "dynamic component of attentional shifts." The experiments are concerned with separating the two factors which determine the localization of EI: "eye-movements" and "movements of attention." The localization of EI and AI during rotary movements was studied. The process of "displacing" voluntarily the EI of different objects brought to light the importance of attentional processes. Such processes are viewed as dynamic acts by means of which objects of eidetic vision may be moved. Displacements depend not only on the nature of the act but also on the properties of the object. Jaensch believes that the fact that "optical attention" influences the localization and form of objects in eidetic vision to a remarkable extent has also a bearing on the problem of why verbs indicating modes of sensing require the accusative (50). In the eidetic individual psychic functions exert ("in the literal sense" of the word) "a causal function upon the objects of perception, influencing, changing, and developing them." Assuming that the eidetic stage has been a phylogenetic one, it is easy to answer the above-stated philological question. Storch (*Zsch. f. Psychol.*, 1924, 94, 146) tries to support Jaensch's views by referring to some observations on schizophrenics. In 1911, Jaensch showed the importance of the *Kovariantenphänomen* for theories of depth perception (40). The same phenomenon is now studied with eidetic subjects (19). This phenomenon may be observed using the following arrangement: three parallel threads, a, b, and c, are exposed in such a way that they seem to hang in one plane; if, then, the distance of a from the observer is slightly increased or decreased, c seems to be displaced either in the same or in the opposite direction. The study shows that "there is a remarkable parallelism between the phenomena in EI and in normal vision." Freiling (17) is concerned with the exploration of the

characteristics of normal perceptions during the "eidetic phase." He arrives at the result that the perceptions of children and young people have something of the "plastic" nature of EI, which means that they are strongly influenced by external stimuli as well as by psychic factors. More specifically, he asserts on the basis of his experimental work that the localization of *real* objects is strongly influenced by the mechanism of "optical attention." Objects can be "displaced" by eye-movements and changes in attention. It is easier to displace objects which look light in weight than to move heavy-looking objects. In some cases, only parts of objects are displaced under certain conditions. Sometimes upon increasing the distance of an object from the eye there is an increase in the apparent magnitude of this object. In many cases, the form of an object is strongly influenced by the form of a simultaneously exposed object. Freiling also includes a number of observations on changes in the apparent magnitude of objects in everyday life. Jaensch (51) believes that the results obtained in the eidetic field are of fundamental importance for certain problems of Kantian philosophy. His theories in this respect cannot be reviewed here. In considering the results on EI in their bearing on biology in general, Jaensch gathers certain facts concerning the anatomy, histology, and embryology of the eye (52). He points out that our "original visual experiences" are more closely related to *Vorstellungen* than to "pure sensations." In the course of ontogenetic development "pure sensations" are never obtained. Various reasons are given for considering the eye not only as a receptor but also as a "cerebral organ." From an educational point of view Jaensch (53) finds that "pedagogic optimism" may have some justification since even the perceptions of the child have a certain plasticity. He advances the view (54) that in psychology of childhood and adolescence we cannot obtain any insight into psychophysiological functions by testing and by blindly registering "objective" responses. An experimental analysis of the factors underlying these objective responses must be attempted.

C. In some investigations EI are studied with the view to settle some problems of the "psychology of color." Some of Herwig's (34) results are as follows: (1) the majority of eidetic individuals see EI most clearly on a gray background of a certain brightness ("optimal ground") in certain cases, however, the EI can be best observed with closed eyes; (2) the EI is a central phenomenon which in some instances can be voluntarily influenced; (3) on account of its visibility the EI can be subjected to laboratory methods, for instance an EI-color can be mixed with an objectively presented color and

the kind of mixture can be quantitatively determined; (4) EI are not identical with positive or negative AI, in fact, Herwig mentions eight criteria which force us to draw a distinction between EI and AI; (5) in most cases it is possible experimentally to change a positive EI of a colored area into a negative EI, a change which is dependent on factors such as the time of exposure, the distance of the stimulus object from the point of fixation, the size of the stimulus, and the "type" of observer; (6) phenomena of "simultaneous induction" are more pronounced in the EI than in normal vision, and it is supposed that these phenomena are apt to throw light on the problem of peripheral color blindness. A study of Jaensch (43) deals with the very striking contrast phenomena in the EI. The experiments of Herwig and Jaensch (35) on mixing objectively presented colors with colors of EI are to show the "objective reality" of EI and persistence of eidetic phenomena. It is of special interest to note that the stimulus objects used are small and that sometimes rivalry phenomena occur. Kollath (82) points out that Purkinje's phenomenon can be observed in AI and EI. Feyerabend's investigation (14) starts from the problem of the approximate constancy of colors (*angenäherte Farbenkonstanz*). His experiments throw light on the relation between EI and the phenomena of contrast and, what Jaensch calls, transformation.

D. In general Jaensch's work on EI is not entirely confined to solving "problems of the classical theory of perception." It is his belief that the *Struktur* psychology of Dilthey, Spranger, etc. (60), is not hostile to experimental psychology. He wants to employ a "combined experimental-*struktur*-psychological procedure" (55, 56, 58). A problem of the psychology of racial differences (56) is attacked from this angle. Jaensch believes that the B-type (referring to the Basedow-syndrome) is more frequent in Frenchmen than in Germans. He (60, 61) denies that there is an antagonism between "cultural science psychology" and "natural science psychology" in the field of eidetic research. He advances definite views on the value of the "typological method" and shows how "general" results can be reached by the examination of "typical" cases (65). The reviewer has discussed Jaensch's "typological" research in connection with other attempts at a psychology of types (78). In considering the relation of psychology to esthetics, Jaensch (58) points to the fact that for many artists and esthetically inclined persons the gap between "sensation" and "imagery" does not exist, that they possess EI as children do. Jaensch states that children utilize EI in drawing, painting and production of fairy-tales. By influencing

the eidetic disposition of a child in a systematic way remarkable results can be achieved. The EI as found in some artists and in certain children establish "a close coherence between inner and outer world." This coherence is not only evidenced on the level of "elementary psychic functions" but also in the philosophy, in the *Weltanschauung* of eidetic individuals. The above-mentioned close coherence as well as the "integration" of perceptual, emotional, and intellectual functions in a large number of artists (and children) explains for Jaensch the tendency to "harmony" in art. He believes, too, that many problems of esthetics as well as of the psychology of thought can be solved by experimentation on synesthetic persons who possess EI (58, 63). Experimental work has led him to distinguish: (1) affective synesthesia; (2) imaginal synesthesia; (3) sensation-synesthesia. In certain strong synesthetic types, thought is almost entirely governed by "symbols" ("schizoform" type of thinking) (64). Kroh (86) tries to show the importance of EI in writers. He bases his conclusions on an analysis of their publications and on statements made in their diaries, letters, speeches, etc. According to Kroh it is highly probable that O. Ludwig, L. Tieck, E. T. A. Hoffmann, J. V. v. Scheffel, and Goethe were eidetic. Brandl (7) believes that the works of Wordsworth also indicate the presence of EI in the writer. The philosopher Riehl considered himself eidetic (59, 62). Kroh (87-89) gives some data on the frequency of the eidetic disposition. He examined 379 high school pupils, ages from nine to nineteen, in Marburg and found EI in 61 per cent. If the "weak" cases are excluded, there remain 37 per cent. There was a rapid decrease at the age of seventeen, but from the age of ten to sixteen 65 per cent of all pupils were eidetic, the mean variation being low. Among 178 pupils of a *Gymnasium* in Marburg, age nine to eighteen, 49 per cent were eidetic, but, taking only the cases with vivid EI, there were 30 per cent. In other words, in the *Gymnasium* there were less eidetic pupils than in the other high schools. Herwig (34) states that in 205 Marburg boys, age ten to fourteen and a half, EI were found in 76 boys (37 per cent). Krellenberg (83) refers to school classes with the following percentages: 32, 26, 28, 46, 17, 34, 67. Kroh asserts (89) that EI are as frequently found in six- to ten-year-old children as in individuals from ten to sixteen. He points out (88) that the Marburg figures have only local importance. In Braunschweig EI are very exceptional whereas in the grade and high schools of Tübingen there are classes with 80 per cent and more. In Kroh's book (88) the educational importance of EI is especially

stressed. A good summary of the characteristics of EI as determined by the work of the Marburg school is given and the relation of the EI to related phenomena such as *Sinnengedächtnis*, hypnagogic images, dreams, synesthesia, pseudohallucinations and hallucinations, is discussed. An explanation of the fact that in the eidetic individual a central excitation calls forth a sensory event is attempted in a discussion on the "psychophysics of EI." In the last part of the book the behavior of the eidetic pupil in class is sketched and the relation of EI to intelligence is considered. It is shown how EI are utilized in various school subjects. Some suggestions concerning methods of teaching are made. The belief is expressed that the detailed analysis of EI may be advantageously used for diagnosing abnormal mental states. The knowledge of the form and the content of a person's EI may be of considerable help in the study of his personality. In fact, Kroh asserts that the investigation of EI may be considered as an instrument of an "objective psychoanalysis." In 1922, Henning (25) found that in olfactory learning experiments some of his subjects reported olfactory EI. Henning asks: do not all olfactory images possess eidetic character? In another study he distinguishes different types of visual MI, considering the presence or absence of fluctuation in MI the distinguishing characteristic. The relation of these MI-types to EI is discussed (26, 29). Henning apparently confirms most of Jaensch's results on EI (30). He maintains that the metamorphosis from the "undifferentiated unity" of the EI into MI, EI, and AI does not take place in the olfactory field. In the olfactory field the "undifferentiated unity" can be most conveniently studied. Henning claims that there are not only stable and fluctuating MI and EI in the visual field, but that auditory EI can be differentiated in the same way. He (27) speaks of stable and fluctuating auditory EI. In addition, there are pain-EI. Certain people fail to get EI if only one sense field is involved. The experiments must be devised in such a way that different senses are stimulated simultaneously. Henning reports on individuals in whom the application of Jaensch's method failed to discover any trace of EI, but who had such vivid spontaneous EI that they would even call out for help. The author is led to the conclusion that the percentage of eidetic persons is considerably higher than assumed by Jaensch. Attention should be paid to his statements concerning the influence of the "constellation" on EI and to his physiological theory of EI. With respect to the experience of an undifferentiated perceptual, eidetic, and imaginal unity, Henning refers the adult to *Urbild* experiences in the olfactory field (31).

Only a small percentage of adults may have such an experience in the visual field. In the gustatory field also EI may be elicited (28). In the second edition of Henning's book on smell (32) olfactory EI are discussed in detail. The statement is made that in the field of the lower senses, images do not exist. Here we revive past experiences eidetically. The rôle EI play in experiments on olfactory sensations is emphasized. The findings obtained in experimentation on olfactory EI are summarized. Henning, in his book on contemporary psychology (33), considers Jaensch's results to be of fundamental importance. The author claims that the existence of a normal eidetic stage is established through group investigations on children in Marburg, Kassel, Höchst, Griesheim, Frankfurt, Wiesbaden and different localities in Hessen-Nassau, Göttingen, Braunschweig, Essen, Lübeck, Danzig, Breslau, Würzburg, Wien and other places. The eidetic phase is preceded by the unitary phase. It is to be noted that Henning does not agree with Jaensch concerning the onset of the non-eidetic phase.

E. We have still to consider the work of a large number of investigators who have been interested either in EI themselves or in the theoretical implications of the findings. In different laboratories and in different countries the attempt has been made to ascertain results as to the frequency and kind of EI. The subject of other studies is whether or not EI can be described in terms of well known phenomena such as AI or certain subjective visual sensations. Koffka (80) writes a critical analysis of the Marburg studies published before 1923. He views it as one of the chief results arrived at by Jaensch and his coworkers that they have been able to demonstrate that EI can be subjected to systematic experimentation, but an exact investigation of AI in children is considered a desideratum. Koffka finds that the Marburg data do not warrant such sweeping generalizations as advanced by Jaensch. In a special study (81) he shows that the measurement of the size of AI involves a number of psychological problems. The size of AI is to a certain extent determined by the method of measurement. Emmert's law which is of very great importance in the Marburg investigations is the subject of Noll's study (91). He shows that under certain conditions this law does not strictly hold. The results of Hartgenbusch (24), who is concerned with the factors influencing the measurement of perceived objects are also of considerable weight in relation to the problem of the size of AI. In this connection attention should be drawn to Goldschmidt's discussion (22) of Emmert's law. Schwab (98) on the basis of an experimental

investigation on school girls in Heidelberg points out the ambiguous character of the word "see" frequently employed by children. Jaensch, in his reply, states his objections to Schwab's method and reports the results of some checking-up tests in Heidelberg (60, 61). Schroff (97) examined the influence of suggestion on AI in 61 boys. He reaches the conclusion that EI are frequently nothing but AI. In general, EI can be accounted for in terms of AI and MI. The experiments of Schroff have been criticized by Jaensch (66). In the study of Zillig (107) the relation of EI to memory for forms and colors, to "immediate visual memory," and to "attention" is considered. The author wishes to analyze the EI with regard to the various functions which constitute "intelligence." Intellectually inferior individuals are more likely to be eidetic than normal people. The frequency and "degree" of EI in Vienna is the subject of Zeman's study (106). The discrepancies between the Vienna publications (185-190) and the Marburg findings necessitated an investigation of this kind. Zeman examined 200 individuals most of whom were pupils in the Vienna high schools. He states that, including latent EI, 176 persons (88 per cent) were eidetic. There remain 61.5 per cent if the cases with "latent" EI are excluded. It is stated that between the ages of eleven and sixteen the eidetic disposition must be viewed as a common characteristic of all children. Again, as in many eidetic studies, it was found that EI are more frequent in the female sex (Zeman: 75 per cent girls, 55 per cent boys). The subjects had to observe the EI first with closed eyes. In only 2.5 per cent of the cases EI, representing almost all details of the stimulus object, could be seen with open eyes in daylight. Most of the subjects had fluctuating EI (B-type). At the same time the conclusion is reached that EI in Vienna and Marburg do not differ with regard to Emmert's law. Zeman calls attention to the special class of gray EI. He believes that in groups with low intelligence EI are more frequent and "stronger." Scola (99) contributes a theoretical discussion of the relations of MI, EI, and AI on the basis of the Marburg eidetic investigations. The author tries to explain the "typical differences" between these three kinds of phenomena as well as their variability in behavior without recourse to "new functions" or to differences in psychophysical foundation. For Scola (100) the *Verhaltensweisen* of the subject are of decisive importance. A study from the Physiological Institute of the University of Berlin by Karl vom Hofe (36-37) reports on an eidetic professor of medicine who frequently saw objects at places where he intended to put them before actually displacing the object. The

horopter experiments reported and the observations on spatial displacements are confirmatory of the results of Jaensch with children. The study of Bergmann (6) is concerned with the development of "visual memory" in school children. He wants to reconcile the experimentally ascertained fact that visual memory improves with advancing age with the fact that at the same time eidetic imagery retreats. The author believes that the retreat of EI is overcompensated by an ever increasing influence of "formal discipline" on memory. Schilder (96) who himself is eidetic reports on the psychoanalysis of an eidetic individual and discusses the relationship between psychoanalysis and eidetic research in general. Anschütz (3), in his study of "complex musical synopsis," considers the relation of synoptic phenomena to EI. Argelander (5) has recently examined the relation of *audition colorée* to EI. Kirek (75,76), who is concerned with the problem of "formation of concepts" in children, asserts that children of the B-type have great difficulties in replacing vivid EI by "abstract concepts" and that cases with very pronounced eidetic imagery are not likely to be very intelligent. Friedmann (*Zsch. f. Individualpsychol.*, 1927, 5, 196) discusses the relationship between Adler's individual psychology and eideticism. She thinks that the development of EI is frequently conditioned by "organ-inferiorities." In many individuals with EI the eyes are anatomically or functionally defective. EI arise very often at moments of mental or bodily weakness. They are frequent during puberty, in a period in which the mind indulges in various forms of "preparatory training." Katz (70) does not agree with Henning's statement that all tactual images are EI. He believes that Kroh (88) who found 76 per cent tactual EI has underestimated the influence of suggestion. Here Wittmann's experimental analysis of tactual EI should be mentioned (105). His physiological theory of memory is of special interest. Ach (1) discusses a possible relation of the "perseverative tendencies" of certain individuals to certain kinds of EI (T-type). ✓ Werner (104) shows how an examination of the nature of EI throws light on some problems of developmental psychology. He calls attention to the close relation between the "physiognomic" way of viewing the world, which is of outstanding importance in children and primitives, and certain forms of eidetic *Anschauung*. Kretschmer (84) also believes that eidetic research will throw light on the mechanism of the primitive mind. Fischer and Welke (15) call attention to EI which have the character of objective reality. They are easily distinguished from illusions and pseudohallucinations; difficulties, however, arise in drawing a distinction between halluci-

nations and EI with "reality-character." The authors suggest subdividing hallucinations into three classes: 1. non-psychogenic hallucinations; 2. psychogenic hallucinations; 3. EI with "reality-character." As regards class 3, phenomena of this kind go with different mental and nervous disorders. Reference is made to observations on 10 cases.

F. In France, the literature on EI and on the eidetic type has been reviewed by Quercy (94) and Tripp (102). Tripp suggests conducting eidetic investigations in French-speaking countries on a large scale. Quercy (95) examined 175 boys and 25 girls in Rennes and Paris. He admits the possibility of EI in one of these cases; at the same time he claims that his methods have been similar to those used by the Marburg School. Cramausel (10) states his objections to the procedure of Quercy. Antipoff (4) describes spontaneous EI in her seven-year-old son. Flournoy (16) speaks of EI in a feeble-minded woman of thirty years.

G. W. Allport (2), summarizing excellently the descriptive and functional characteristics of EI as determined by Jaensch and his followers, refers to his own investigations among eleven-year-old children in the schools of Cambridge, England. He finds that the Marburg theories are not acceptable, "for they rely for support upon aspects of the eidetic phenomenon concerning which there is great uncertainty." Drummond (12) considers EI in a discussion of the "nature of images." She mentions some experiments on London school children. In this connection, the observations of Warren (103) deserve special mention. Carmichael (9) suggests that the Binet test may be a ready tool for the selection of eidetic children. If for example an unusually good performance is given by a child in test X, 3 of the Stanford revision of the Binet-Simon test, EI may be suspected. Downey (11) reports on a "visually preoccupied" boy of four years. Certain reactions of this child are believed to indicate the possession of eidetic imagery.

In Italy, Kiesow (71, 72, 74) and Gatti (74, 20) have been interested in certain aspects of EI. Kiesow considers the absence or presence of negative AI a crucial point in testing Jaensch's theories. Examining 58 children, aged from six to fourteen, he was able to ascertain negative AI in all cases. Experiments on four- to six-year-old children brought out the fact that at this age the absence of complementary AI is not the rule but rather the exception. The investigations of Gatti in Milano led to the same result. The present writer (unpublished study), using from four- to six-year-old children in Minneapolis as subjects and employing a method more suitable

for this age than Kiesow's, found some cases who did not get negative AI. But it is certain that the influence of "constellation" at this age is a factor of considerable importance. Furthermore, keeping in mind the different characteristics of EI, we are unable to see why the presence or absence of negative EI should be such a crucial point. Recently Kiesow (73) has advanced the view that AI- and EI-phenomena are of an entirely different nature. He wants to employ the term "eidetic" only to the kind of phenomena described by Urbantschitsch. Phenomena of this kind, he believes, are probably not very often found in children and adults.

In America, EI have been studied by the present writer in California, Minnesota, New York City, and West Virginia. The aim of the California investigation (77, 79) was to get some data on the behavior of EI in the localities studied and to solve some problems of normal perception by means of EI. The study carried on at Stanford University, Palo Alto and San Jose is more concerned with the phenomenology of eidetic vision than with theoretical considerations as to the function of EI. Protocols are included which throw light on the process of "building up" and "fading away" of EI as observed by the subjects; the sequence of the different parts and the factors determining this sequence; localization and duration; completeness and clearness; the influence of subjective factors (intentional acts, feelings, etc.) on EI. Many of Jaensch's experimental results could be confirmed, but the EI examined by us seemed to be less "psychonomic" than those described by Jaensch.

II

It is apparent that the term "eidetic type" used by the Marburg investigators involves entirely different meanings. Reference is made: (1) to the eidetic phase, the existence of which is assumed on the basis of the experimental investigations available; (2) to the application of the "typological" method, a discussion of which would lead to a reconsideration of the foundations of psychology; (3) to the psychophysical constitution which is presumably related to eidetic imagery. It is not our aim here to examine critically the first two meanings; we shall, however, call attention to some studies concerning 3.

A. We have to consider here the work of W. Jaensch on "psychophysical types." The psychologist cannot fail to be interested in many aspects of this work and in the hypotheses presented. Although the verification of these hypotheses is to be arrived at only in the field of internal medicine, nevertheless, a short presentation of W.

Jaensch's ideas may be justified. It seems to us as if W. Jaensch started out with the idea that eidetic individuals differ somatically, that they belong to different "types," but that, in the meantime, he has reached the conclusion that very general biotypes, that distinct "psychophysical reaction systems" exist, the empirical study of which may be profitably guided by an analysis of the "optical symptoms," of the EI. In the first case, the EI is the point of departure, in the second case the mechanisms of the biotype are the starting point for research work. In presenting W. Jaensch's ideas it is not possible to separate these two aspects sharply.

The results of his previous work (115-120) have been embodied in the book on the "physiology and clinic of psychophysical personality" (124). It is assumed that the eidetic individual, that is in general the individual before and up to puberty, and the noneidetic individual, which means in general the adult, are not only quantitatively, but also qualitatively different. The presence of EI, the fact that somebody belongs to the "eidetic" type, implies that this individual displays also certain "typical" characteristics in his AI and MI, in his affective and intellectual life and in somatic respect. Thus, "eidetic type" really implies a biotype with certain psychophysical characteristics.

Whence this implication? Experimental results show that EI behave differently. Two types may be distinguished. In the case of the *first* type the EI is frequently nothing but a visualized idea, the person "sees" whatever he is thinking about; he can, without effort—frequently without a preceding presentation of a stimulus object—call up EI and banish them at pleasure; he can change the color, the form, the localization, etc., of the EI provided such changes are "meaningful"; spontaneous EI are considered "normal" and natural phenomena; the EI have in most cases the color of the stimulus object; they are rich in detail and extremely "plastic"; the values of Emmert's law are about the same as found for MI; "fluxion" is very pronounced; the phenomena may last indefinitely, the duration depending on the person; the person's AI are generally "normal," the MI fluctuating and unstable. In the *second* type, the EI assumes more the character of an AI; to "see" phenomena at will is hardly possible; the EI perseveres in spite of the intention to banish it; the person is often unable to change the form and color of the EI, and the process of changing seems very strenuous and proceeds very slowly; spontaneous EI occur exceptionally, but they are considered unpleasant; the EI show in most cases the complementary color; quite often they are not very distinct; Emmert's law

holds in most cases; "fluxion" is not observed very often; the duration is independent of the "will" of the person; the AI frequently last very long, the MI are possessed of a perseverating character.

Thus, using merely "optical" criteria we have two "types." The first type is called B-type (referring to Basedow's syndrome), the second one T-type (referring to tetany). It is possible, therefore, to compare EI which belong to the same "degree" but to different "types." One may also compare different types on the same "level," for instance on the level of AI. At any rate, it should be clear that two "types" can be established on the basis of "optical symptoms." If it can be shown, however, that the EI of the B-type, the EI_B , is only *one* in a complex of closely related somatic and psychic stigmata, the necessity seems to arise to establish a general biotype, the B-type. If it can be shown, furthermore, that the EI of the T-type, the EI_T , belongs to a complex of related T-stigmata, we must assume a general T-type. EI, then, become of secondary importance. They may be profitably used as diagnostic tools, that means, EI and differences in EI-behavior are of interest on account of the fact that they are indicative of differences in "psychophysiological reaction systems."

At the outset of his work, W. Jaensch emphasized the relation of the two types to Basedow's disease, and tetany (hence his terminology). He pointed out that in one case we have a complex of basedoid symptoms: wide palpebral aperture, slight protrusion of the bulbs, frequent pupillary changes, Moebius' sign, certain cardiac symptoms, tremor of the fingers, exaggerated skin reflexes, etc. In the other case we have the symptom complex of the tetanoid state: increase of the mechanical and galvanic irritability of the peripheral nerves, etc. It would be apparently in harmony with W. Jaensch's present views to omit the reference to the basedoid and tetanoid states in designating the two "psychophysical systems." At present, he frequently uses the terms B- and T-complex.

The justification for distinguishing these two "complexes" is, as has been mentioned above, based partly on the results of the "optical" investigation, and partly on clinical observations. In addition to reports on the frequency of various clinical symptoms, W. Jaensch includes records on the galvanic and mechanical irritability of the peripheral nerves and the mechanical irritability of the muscles of his subjects. In such a way he arrives at a "distribution of the stigmata of the B- and T-complex as well as of EI at different age levels." The empirical material obtained leads him to the conclusion that the "overexcitability" manifested in the optical field

through the possession of EI is present in the motor and sensory field in general. But the overexcitability, to use W. Jaensch's term, is by no means something pathological in children and in young people. It reduces itself to different degrees of excitability which, in youth, must be viewed as perfectly normal. The retreat of the somatic tetanoid or basedoid stigmata is accompanied by the retreat of the corresponding EI. It is maintained that there is a certain parallelism between somatic and optical stigmata.

Our presentation should make clear that W. Jaensch believes that his biotypes hold not only for eidetic, but also for non-eidetic persons, in short, for all individuals, for human personality in general. The distinction between T- and B-complex holds for "elementary" as well as for "complex" psychic functions and implies a differentiation in somatic respect. The tetanoid excitability can be reduced by calcium treatment; by such means EI_T can be "weakened" or even banished. EI_B cannot be influenced by calcium. But in general it is assumed that the two biotypes cannot be differentiated on purely pharmacological grounds. Jaensch believes that his B-type easily responds to psychic stimuli and has a close relation to "psychopathy" whereas the T-type responds more easily to "exogenous or endogenous physiological" stimuli and is closely related to "neuropathy." He characterizes the first one as a "psychovegetative," the second one as a "physiovegetative" type. According to Jaensch in every organism T- as well as B-complex are present; but the dominating complex determines the picture. The endocrine factors are certainly not of decisive importance since "ionic conditions, vegetative, central and peripheral factors" are of equal importance. The T- and B-complex represent two "psychophysical vegetative systems" the first of which seems to be chiefly dependent on the subcortex, the second one on the cortex.

To sum up: a distinction originally drawn between two kinds of EI has led W. Jaensch to a distinction between a "subcortiform (paleencephalitic)" and a "cortiform (neencephalitic) reaction type" which he considers two general biotypes.

Empirically, however, "pure" types are the exception rather than the rule. There are "mixed" types with corresponding EI. Jaensch speaks of a BT-type and TB-type. He also speaks of a T_E -(epileptoid component) type and a B_H -(hysterical component) type and of other subtypes. It is maintained that most eidetic individuals, in fact the majority of children and eidetic adults belong to the BT-type.

There is no doubt that W. Jaensch's book touches upon an exceed-

ingly large number of problems of psychology, physiology, anatomy, histology, embryology, and genetics. Material from widely scattered sources is collected to support the theories of the author. Unquestionably, much empirical work has still to be done to verify the hypotheses presented. The psychologist who is chiefly interested in the facts concerning EI will welcome the fourth and fifth chapter of Jaensch's book. It is to be noted, however, that very often references to theory are made where an empirical statement would be desirable.

B. The interesting attempt is made to apply the methods of capillariomicroscopy (Otfried Müller) to the investigation of the skin capillaries of infants, of feeble-minded and neurotic persons (112, 113, 123, 124, 137). The relation between "archi-capillaries," endocrine system and feeble-mindedness is dealt with by W. Jaensch and Wittneben (125). Jaensch started out examining the shape of the skin capillaries of the nail-groove in hypothyreotic cretins. Further research seemed to demonstrate a striking similarity between the capillary forms of cretins with those in new born infants and feeble-minded and backward children. On the basis of an investigation on 3,100 children, comparing the development of "abnormal" and "normal" capillaries, Hoepfner (112) presents his "morphogenetic scheme" of the capillary system. The individuals with abnormal capillaries were examined with regard to EI. Jaensch and his coworkers try to show that the capillary forms may be influenced by treatment with certain glandular extracts. Here the recently published case studies of Wittneben are of special interest (126).

In discussing the relation of EI to hallucinatory and psychotic states Jaensch advances the view that the present results strongly suggest that an eidetic individual in delirium tremens would easily hallucinate. The question arises whether it is possible to enhance EI experimentally. W. Jaensch reports that he could secure effects from mescal (124) and potassium phosphate (119, 124). Mescal especially has been used quite frequently on account of its optical effects (108, 111, 129, 132, 133, 135, 136). Jaensch found that by means of this drug non-eidetic persons produced EI and that eidetic individuals who previously saw only complementary EI obtained EI in natural colors. The reviewer (129) did not turn eidetic upon eating mescal buttons. In general, his investigations brought out large variations in the effect of this drug in different subjects and in one subject at different times.

C. We have still to consider in the following a number of studies which have a bearing on W. Jaensch's psychophysical types. Klöss (128) applied the diagnostic methods of Jaensch to 79 male and 19 female patients. Here the relation of EI to ulcer is a point of considerable interest. In Marburg, E. R. Jaensch and W. Jaensch (114) secured data on EI and on the galvanic irritability of sportsmen during training. In Breslau, Fischer and Hirschberg (110) examined 70 boys and 70 girls, aged from nine to eighteen, to determine the frequency of EI and to collect data on the eidetic disposition. Among these 140 individuals 139 (99.3 per cent) were pronounced eidetic. The "acme" of EI was found to be between the twelfth and fourteenth year. The authors, therefore, accept Jaensch's view that EI represent a general characteristic in youth. Again, it is asserted that in females EI are likely to belong to a higher "degree," to be stronger than in males. Females are also considered superior in arousing EI voluntarily. The authors reject, however, W. Jaensch's thesis that the two kinds of EI which are distinguished in the Marburg investigations have any relation to the tetanoid or base-doid state. W. Jaensch (121) tries to explain Fischer and Hirschberg's results and advances various arguments to show the validity of his psychophysical types. He points out that the authors have taken into consideration only some "preliminary" publications on the B- and T-type. Karger (127) essentially confirms E. R. Jaensch's views concerning EI, but he also rejects the constitution types of W. Jaensch. According to him it was impossible to banish EI by means of calcium or thyreoidin. W. Jaensch (122) considers this to be confirmation of his theory since EI_B —with which Karger had to do—cannot be influenced by calcium. Leven (130, 131) also does not accept W. Jaensch's hypothesis that EI are related to different psychophysical types. He attempts to explain the presence of EI on phylogenetic grounds. The prehistoric primitive man who had to rely on his senses utilized EI. In the subsequent development the power of "abstraction" became stronger, but EI still appear in children "according to the biogenetic fundamental law." Zappert (138), in a discussion concerning neuroses in childhood, expresses the view that W. Jaensch has introduced an "entirely new method" for the determination of sensory overexcitability which may become of importance in the work on endocrine factors in neuroses. Billigheimer (109) reports about beneficial effects of calcium treatment in encephalitic patients in whom W. Jaensch found an "enhancement" of AI-phenomena. The AI, however, were not at all influenced by calcium. In this connection the study of Neuhaus (134)

on macropsia and micropsia in basedoid persons should be mentioned. On the basis of his experiments the author concludes that these phenomena are of central origin.

III

If emphasis is laid upon the phenomenology of EI, it becomes imperative to relate EI to hallucinations, pseudohallucinations, illusions, hypnagogic images, dreams, and a large number of subjective visual phenomena. It also becomes necessary to take into consideration, *e.g.*, the nature of optical experiences in hypnotic experiments and the way in which affective factors influence our perceptions in everyday life. In special reviews the work on subjective visual sensations has been considered very often, principally on account of its bearing on certain theoretical questions and on some problems of pathology. We do not intend here to consider in detail the investigations which are available in this field. We should like, however, to call attention to those studies which we consider have some definite bearing on eidetic research.

A. The researches of Urbantschitsch are chiefly dealing with EI in Jaensch's sense. At least we have EI here in Jaensch's sense if one does not insist too strongly on the "health" and "normality" of the eidetic individual. These investigations of Urbantschitsch which are apparently more quoted than read have been attacked by Stumpf (184) on account of the methods of the experimenter and the kind of subjects used. In a large number of experiments (186, 187) Urbantschitsch is concerned with the ways in which subjective visual and auditory phenomena might be influenced experimentally. In his book of 1907 (188) the subjective phenomena in the visual field are described with regard to richness in details and with respect to changes in size, brightness, color, content, and localization. The author is very much interested in the influence of disturbing stimuli on the phenomena. He tested the effect of tactual, auditory, thermic, and galvanic stimuli. In some cases a mirror was used to cast light upon the closed eyes. Of special interest are the reports on the influence of thought processes on these subjective phenomena. In 1908 (189), Urbantschitsch is mainly concerned with the "corrections" which may occur in visual (and auditory) EI; using anagrams or skeleton-words as stimuli, he finds that the subjective phenomenon "corrects" or "supplements" the stimulus: the correct or complete word is "seen" or "heard." Asking the subject to add $18+8$, the subject may report an auditory EI of "twenty" and a visual EI of "six." In a recent study (190) Urbantschitsch points

out that in the visual EI objects, or parts of objects, may appear which have not been noticed consciously by the subject during the presentation of the stimulus object. Lillien J. Martin (148, 168-171), working with subjects especially at Stanford University, has systematically examined "the projection of visual images." The author reports such a large number of interesting facts that even a condensed summary is out of the question here. Obviously, many of her subjects possessed EI. There is no doubt that her study of the "localization of the visual MI" is of special importance for investigators of fluctuating EI.

B. We have to consider now a large number of investigators who were able to study subjective visual phenomena in themselves. Du Bois-Reymond (142) reminds us that it was only Purkinje who could—quite different from J. Müller, Plateau, and Fechner—defy the "law of nature" by experimenting on himself without undermining his health. Special attention should be paid to Purkinje's statements on the "after-image, imagination, memory of the visual sense," in the first part of his "*Betrachtungen*" (178). The "after-image" of Purkinje is in many ways comparable to EI. A sharp distinction is drawn between these "after-images" and what Purkinje calls "*Blendungsbilder*" and what we call after-images. Johannes Müller (157, 173, 174), whom Jaensch considers a representative of the T-type, published his book on "phantastic visual phenomena" in 1826. His report on the behavior of his subjective visual phenomena (*cf.* especially pp. 20-24) is of outstanding importance (173). At the same time he gives us a clear picture of the conditions which influence these phenomena. He refers to Purkinje's and Goethe's observations. There is no question that the subjective phenomena observed by Goethe have been different from those of Müller. According to Jaensch, Goethe must be viewed as a representative of the B-type. The book of Hibbert-Ware (159) on "apparitions" is still of considerable value. The publication of Henle in 1838 (158) is more interesting on account of the observations of the author than on account of his theory concerning the "*Gedächtnis in den Sinnen*." These observations may be compared with those of Mach reported upon in his "analysis of sensations" (167). G. H. Meyer (172; *cf.* also 160) acquired through systematic training the ability "to produce subjective visual sensations voluntarily." With regard to the possibility of a voluntary arousal, we have on the one hand Meyer, Goethe, and Staudenmaier, on the other hand Joh. Müller and Kandinsky. Meyer's work is noteworthy on account of the fact that in many cases the phenomena were followed by AI. The reviewer has

also found AI of MI in eidetic subjects. Imagining with closed eyes an object of a particular color, the complementary color will be seen after opening the eyes. It is necessary, of course, that the subject be entirely "naïve" with regard to color. The same phenomenon has also been described by Jaensch and Freiling. (Cf. also Féré (152), Downey (149), Alexander (140), and Chowrin's interesting observations (141).) Pick (177) calls our attention to the description of EI in the work of Wigan and Brodie. Wigan's book (192), which is certainly delightful reading, contains, chiefly in chapters 8, 11, and 14, some material which has a bearing on our problem. In this book we find the often quoted description of "a gentleman who saw his own self," a painter who informed Wigan that "he had once painted (large and small) three hundred portraits in one year." Brodie (144-146) reports about a man who could project "an absent or imaginary object" into perceived space "with all the brightness and distinctness of reality." In Abercrombie's discussion (139) "of false perceptions" a distinction is drawn between those "arising in the organs of sense" and those "connected with hallucinations of mind." Attention should be called to Dr. Ferriar's observation and the references to Darwin and Newton. In the elaborate treatment of hallucinations by Brierre de Boismont (143) the chapter (24) on "causes of hallucinations" contains many valuable suggestions. The more recent book by Parish (175) is of greater interest to the eidetic investigator, since the author does not ignore "the waking hallucinations of healthy persons." Galton's investigation (154) of the "vividness of mental imagery" is not only valuable on account of the data on "the visualizing faculty," but also with regard to the author's view on the function of imagery. In the discussion of "visionaries" Galton remarks that he has "a sufficient variety of cases to prove the continuity between all the forms of visualization, beginning with an almost total absence of it, and ending with a complete hallucination." This result is based on reports from "sane and healthy" persons. Here the attempt of Fechner (151) to classify his cases "nach dem aufsteigenden Grade der Annäherung an sinnliche Phänomene" and his distinction between after-image, memory-image, "memory-after-image," and *Sinnengedächtnis* should be mentioned. The work of Kandinsky (162, 163), which has become of outstanding importance for any scientific analysis of hallucinations, is also of great importance for eidetic research. The pseudohallucinations described by Kandinsky have, from phenomenological point of view, much in common with EI, as has been pointed out by Kroh, Fischer, and Hirschberg. Kandinsky (162), who him-

self was subject to hallucinations for two years, has given a description of his experiences. On the basis of these experiences he distinguishes "peripheral" and "central" hallucinations. He claims that only about one-tenth of his hallucinations had any relation to his ideas. In his book of 1885 (163), Kandinsky developed his concept of "*eigentliche Pseudohalluzinationen*" in a systematic way. Here he furnishes us a large number of criteria to distinguish these phenomena from hallucinations, from memory-images, and from pseudohallucinations in the sense of Hagen, who had used this term for the first time. It is not possible here to summarize Kandinsky's results. The investigator of subjective visual phenomena will again and again consult this book. Examining closely the concept of pseudohallucination—here Kandinsky's case Dolinin deserves special mention—it seems to us that to identify EI and pseudohallucination entirely is a somewhat rash procedure. In Carpenter's book, "Principles of Mental Physiology" (147) the chapter "Of Sensations" contains some interesting observations. The author thinks that it is "consistent with ordinary medical experience and accordant with physiological probability . . . that real sensations are producible by mental states." Staudenmaier's book (183) is remarkable because of the statements concerning the "technique" of the author which he uses to evoke subjective phenomena in all sense fields. The work of Ebbecke on cortical excitations (150) is chiefly based on the facts of *Sinnengedächtnis*, and is especially noteworthy on account of the fact that the author, professor of physiology, is not entirely dependent on the reports of other observers, but can utilize records on his own subjective phenomena. The reviewer, although he does not believe that the author's memory theory is tenable, considers Ebbecke's book an exceedingly stimulating contribution. The work of the Marburg School is not mentioned, but many points brought out in the study of EI are demonstrated here from a new angle.

C. Anyone concerned with EI has to face the old problem as to the difference between "images" and "sensations." It is out of the question to consider here the voluminous, partly philosophical literature on this subject. On the one hand, attention should be called to a number of experimental investigations; on the other hand, to some theoretical studies. We mention here the experiments of Seashore (181), Külpe (165), Perky (176), Vries Schaap (191), and Rieffert (179). The fact that most of these experimenters employed "weak" stimuli indicates the limited importance of these studies. In theoretical respect the views of Koffka (164), Lindworsky (166), Stumpf (184), and Fischer (153) are to be considered. He who

desires to familiarize himself with the literature on hallucinations and on modern attempts to define the different kinds of subjective visual phenomena is to be referred to Goldstein's "studies on normal and pathological perception" (155) and to Jaspers' analysis (161). In addition, Specht (182), Schilder (180), and Gruhle (156) may be consulted.

Concluding Remarks. In closing, some general remarks may be added. At the beginning, eidetic studies were chiefly concerned with problems of visual sensation and perception. At the present time, as brought out in this review, we have also investigations which have a bearing on the psychology of thought and of memory and on problems of emotional and volitional life. We have, furthermore, investigations which touch upon problems of social, racial, animal, vocational, educational, and abnormal psychology. We have studies in which the attempt is made to make a contribution to esthetics, philology, ethnology, and mythology. Finally, studies are available which are intended to throw light on problems of physiology, anatomy, histology, neurology, embryology, and genetics. The therapeutic importance of the findings is frequently pointed out.

It was merely the aim of the reviewer to call attention to the available studies on eidetic imagery and on the eidetic type. He did not intend, as indicated above, to raise critical questions. Criticisms are preferably made in connection with new empirical findings on eidetic material. There are certain points, however, which deserve special emphasis.

1. Most of the results in the field of visual sensation and perception are based on persons who in more than one sense live in the neighborhood of psychological laboratories. There is, therefore, no doubt about the value of the attempt to investigate problems of "classical" psychology by systematically applying laboratory methods to children. The Marburg School has demonstrated the importance of such an approach. Whether or not the special hypotheses of Jaensch will be verified remains a question for future research.

2. The eidetic studies have brought out that it is possible to utilize *objective* methods for an *Erlebensanalyse*, for the determination of the *subjective* experiences of the individual. These studies lay emphasis on the *how*, and not on the *how-much* and the *what-for*. Methodologically, this point deserves special mention, since many "psychological" researches assemble a large number of psychologically irrelevant "objective" facts. (That *Erlebensanalysen* are not only desirable but, in fact, should be the chief concern of the psychologist, is also stated in many writings of the *Gestalt* school.)

3. The eidetic studies have again shown the value of "typical" cases for psychological research. To arrive at the causative factors of a phenomenon the thorough and all-round investigation of a few, in certain respects, outstanding cases is often more fruitful than the work with a large number of cases. This can be easily substantiated by reference to many studies which constitute a definite advancement in psychology. If we take, for instance, one of the chief contributions to the pathology of visual perception, the work of Gelb and Goldstein (*cf.* H. Klüver, *Visual Disturbances After Cerebral Lesions*, *PSYCHOL. BULL.* 1927, 24, 316), we see that the results are based on the analysis of a few cases. A procedure which relies on "typical" cases only has, of course, definite limitations.

At present it seems to be one of the most urgent problems in eidetic research to clear up the striking geographic differences. A first step would be the determination of the distribution of the eidetic disposition in different regions. There are obvious reasons why medical people, for instance, are at present interested in obtaining "a reliable general index of nation-wide goiter incidence." There is no reason why the psychologist should not begin attacking problems of what Hellpach calls *geopsychology*. Once starting work of this kind, geopsychological studies will soon show that the eidetic disposition cannot be treated as an entirely isolated psychophysiological phenomenon.

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BIBLIOGRAPHY

I

1. ACH, N., KÜHLE, E., and PASSARGE, E., Beiträge zur Lehre von der Perseveration. *Zsch. f. Psychol., Ergänzungsab.*, 1926, 12.
2. ALLPORT, G. W., Eidetic Imagery. *Brit. J. Psychol. (Gen. Sect.)*, 1924, 15, 99.
3. ANSCHÜTZ, G., Untersuchungen über komplexe musikalische Synopsie. *Arch. f. d. ges. Psychol.*, 1926, 54, 128.
4. ANTIPOFF, H., Un cas d'image eidétique spontanée. *Arch. de psychol.*, 1926, 20, 73.
5. ARGELANDER, A., *Das Farbenhören und der synästhetische Faktor der Wahrnehmung*. Jena: Fischer, 1927. Pp. 172.
6. BERGEMANN, W., Versuche über die Entwicklung des visuellen Gedächtnisses bei Schülern. *Zsch. f. Psychol.*, 1925, 98, 206.

7. BRANDL, A., Zum dichterischen Vorstellungsleben bei Wordsworth. *Sitzungsber. d. Preuss. Akad. d. Wiss.*, 1922.
8. BUSSE, P., Ueber die Gedächtnisstufen und ihre Beziehung zum Aufbau der Wahrnehmungswelt. *Zsch. f. Psychol.*, 1920, 84, 1.
9. CARMICHAEL, L., Eidetic Imagery and the Binet Test. *J. Educ. Psychol.*, 1925, 16, 251.
10. CRAMAUSSEL, E., Images eidétiques. *J. de psychol.*, 1926, 23, 1003.
11. DOWNEY, J. E., Observations on a Visually Preoccupied Child. *J. Appl. Psychol.*, 1927, 11, 52.
12. DRUMMOND, M., The Nature of Images. *Brit. J. Psychol. (Gen. Sect.)*, 1926, 17, 10.
13. EMMERT, E., Grössenverhältnisse der Nachbilder. *Klin. Monatsbl. f. Augenheilk.*, 1881, 19, 443.
14. FEYERABEND, O., Der innere Farbensinn der Jugendlichen in seiner Beziehung zu der angenäherten Farbenkonstanz der Sehdinge. *Zsch. f. Psychol.*, 1924, 94, 209; 95, 85.
15. FISCHER, S., and WELKE, W., Eine neue Art von Trugwahrnehmungen (Anschauungsbilder mit Realitätscharakter). *Arch. f. Psychiat. u. Nervenheilk.*, 1926, 76, 143.
16. FLOURNOY, H., Eidétisme chez une débile. *Arch. de psychol.*, 1926, 20, 73.
17. FREILING, H., Ueber die räumlichen Wahrnehmungen der Jugendlichen in der eidetischen Entwicklungsphase. *Zsch. f. Sinnesphysiol.*, 1923, 55, 69, 86, 126.
18. FREILING, H., and JAENSCH, E. R., Der Aufbau der räumlichen Wahrnehmungen. *Zsch. f. Psychol.*, 1923, 91, 321.
19. FREILING, H., JAENSCH, E. R., and REICH, F., Das Kovariantenphänomen, mit Bezug auf die allgemeinen Struktur- und Entwicklungsfragen der räumlichen Wahrnehmungen. *Zsch. f. Sinnesphysiol.*, 1923, 55, 47.
20. GATTI, A., Ueber einige Versuche auf dem Gebiete der eidetischen Phänomene. *VIIIth International Congress of Psychology*. Groningen: Noordhoff, 1927. Cf. p. 273.
21. GÖSSER, A., Ueber die Gründe des verschiedenen Verhaltens der einzelnen Gedächtnisstufen. *Zsch. f. Psychol.*, 1921, 87, 97.
22. GOLDSCHMIDT, R. H., Grössenschwankungen gestaltfester, urbildverwandter Nachbilder und der Emmertsche Satz. *Arch. f. d. ges. Psychol.*, 1923, 44, 51.
23. GOTTHEIL, E., Ueber das latente Sinnengedächtnis der Jugendlichen und seine Aufdeckung. *Zsch. f. Psychol.*, 1921, 87, 73.
24. HARTGENBUSCH, H. G., Ueber die Messung von Wahrnehmungsbildern. *Psychol. Forsch.*, 1926, 8, 28.
25. HENNING, H., Assoziationsgesetz und Geruchsgedächtnis. *Zsch. f. Psychol.*, 1922, 89, 38.
26. HENNING, H., Neue Typen der Vorstellungsbilder und die Entwicklung des Vorstellens. *Zsch. f. angew. Psychol.*, 1923, 22, 387.
27. HENNING, H., Starre eidetische Klang- und Schmerzbilder und die eidetische Konstellation. *Zsch. f. Psychol.*, 1923, 92, 137.
28. HENNING, H., Ausgeprägte Anschauungsbilder der beiden Arten von Geschmackssinn. *Zsch. f. Psychol.*, 1924, 95, 137.
29. HENNING, H., Neue Eigentümlichkeiten der Vorstellungen. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1924, 8, 173.

30. HENNING, H., Die neuentdeckte Erlebnisklasse der Eidetik, die Urbilder und der Konstitutionstypus. *Dtsch. Zsch. f. Nervenheilk.*, 1924, 81, 180.
31. HENNING, H., Das Urbild. *Zsch. f. Psychol.*, 1924, 94, 273.
32. HENNING, H., *Der Geruch*. Leipzig: Barth, 1924. Pp. 434.
33. HENNING, H., *Psychologie der Gegenwart*. Berlin: Mauritius Verlag, 1925. Pp. 184.
34. HERWIG, B., Ueber den inneren Farbensinn der Jugendlichen und seine Beziehung zu den allgemeinen Fragen des Lichtsinns. *Zsch. f. Psychol.*, 1921, 87, 129.
35. HERWIG, B., and JAENSCH, E. R., Ueber Mischung von objektiv dargebotenen Farben mit Farben des Anschauungsbildes. *Zsch. f. Psychol.*, 1921, 87, 217.
36. HOFÉ, K. VOM, Beitrag zur Frage der eidetischen Anlage. *Arch. f. Ophth.*, 1926, 117, 40.
37. HOFÉ, K. VOM, Ueber eidetische Anlage beim Erwachsenen. *Med. Klin.*, 1926, 22, 1361.
38. HOFMANN, F. B., *Die Lehre vom Raumsinn des Auges*. II. Teil. Berlin: Springer, 1925.
39. JAENSCH, E. R., Zur Analyse der Gesichtswahrnehmungen. *Zsch. f. Psychol., Ergänzungs.*, 4, 1909.
40. JAENSCH, E. R., Ueber die Wahrnehmung des Raumes. *Zsch. f. Psychol., Ergänzungs.*, 6, 1911.
41. JAENSCH, E. R., Die experimentelle Analyse der Anschauungsbilder als Hilfsmittel zur Untersuchung der Wahrnehmungs- und Denkvorgänge. *Sitzungsber. d. Ges. z. Beförd. d. ges. Naturwiss. z. Marburg*, 1917.
42. JAENSCH, E. R., Zur Methodik experimenteller Untersuchungen an optischen Anschauungsbildern. *Zsch. f. Psychol.*, 1920, 85, 37.
43. JAENSCH, E. R., Ueber Kontrast im optischen Anschauungsbild. *Zsch. f. Psychol.*, 1921, 87, 211.
44. JAENSCH, E. R., Ueber den Nativismus in der Lehre von der Raumwahrnehmung. *Zsch. f. Sinnesphysiol.*, 1921, 52, 229.
45. JAENSCH, E. R., Ueber die subjektiven Anschauungsbilder. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1922, 7, 3.
46. JAENSCH, E. R., Zur Richtigstellung und Ergänzung. *Zsch. f. Psychol.*, 1922, 88, 317.
47. JAENSCH, E. R., Ueber Raumverlagerung und die Beziehung von Raumwahrnehmung und Handeln. *Zsch. f. Psychol.*, 1922, 89, 116.
48. JAENSCH, E. R., Uebergang zu einer Schichtenanalyse des Bewusstseins und einiger seiner Substrate, gegründet auf die Strukturanalyse der eidetischen Entwicklungsschicht. *Zsch. f. Psychol.*, 1923, 91, 83.
49. JAENSCH, E. R., Die Völkerkunde und der eidetische Tatsachenkreis. *Zsch. f. Psychol.*, 1923, 91, 88.
50. JAENSCH, E. R., Beziehungen von Erlebnisanalyse und Sprachwissenschaft, erläutert an den Verben der sinnlichen Wahrnehmung. *Zsch. f. Psychol.*, 1923, 91, 343.
51. JAENSCH, E. R., Der Umbau der Wahrnehmungslehre und die Kantischen Weltanschauungen. *Zsch. f. Psychol.*, 1923, 92, 1.
52. JAENSCH, E. R., Wahrnehmungslehre und Biologie. *Zsch. f. Psychol.*, 1923, 93, 129.

53. JAENSCH, E. R., Ausblicke auf kulturphilosophische und pädagogische Fragen. *Zsch. f. Psychol.*, 1923, 93, 261.
54. JAENSCH, E. R., Ueber Gegenwartsaufgaben der Jugendpsychologie. *Zsch. f. Psychol.*, 1924, 94, 38.
55. JAENSCH, E. R., Ueber das Verhältnis von experimenteller und strukturpsychologischer Forschungsmethode in der Jugendpsychologie. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1924, 8, 174.
56. JAENSCH, E. R., Zur differentiellen Völkerpsychologie. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1924, 8, 177.
57. JAENSCH, E. R., Ueber eine Lücke im gegenwärtigen Wissenschaftsbetrieb und das Verhältnis von Psychologie und Medizin. *Psychol. u. Med.*, 1925, 1, 36.
58. JAENSCH, E. R., Psychologie und Aesthetik. *Zsch. f. Aesth. u. allg. Kunstwiss.*, 1925, 19, 11.
59. JAENSCH, E. R., Alois Riehl, der Mann und das Werk. *Kantstud.*, 1925, 30, V.
60. JAENSCH, E. R., *Die Eidetik*. Leipzig: Quelle & Meyer, 1925. Pp. 90.
61. JAENSCH, E. R., Die Eidetik und die typologische Forschungsmethode in ihrer Bedeutung für die Jugendpsychologie und Pädagogik, für die allgemeine Psychologie und die Psychophysiologie der menschlichen Persönlichkeit. *Zsch. f. päd. Psychol.*, 1925, 26, 37, 202, 236.
62. JAENSCH, E. R., Ueber psychische Selektion. *Zsch. f. Psychol.*, 1926, 98, 129.
63. JAENSCH, E. R., Vorfragen der Psychologie des Denkens. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1926, 9, 172.
64. JAENSCH, E. R., Ueber das Verhältnis von Elementen und Inbegriffen in der seelischen Persönlichkeit. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1926, 9, 174.
65. JAENSCH, E. R., Die typologische Forschungsmethode (mit besonderer Berücksichtigung der Eidetik). *VIIIth International Congress of Psychology*. Groningen: Noordhoff, 1927. Cf. p. 297.
66. JAENSCH, E. R., Ueber Eidetik und typologische Forschungsmethode. *Zsch. f. Psychol.*, 1927, 102, 35.
67. JAENSCH, E. R., and others, *Ueber den Aufbau der Wahrnehmungswelt*. Leipzig: Barth, 1927. 2d ed. Pp. 567.
68. JAENSCH, E. R., and W., Ueber die Verbreitung der eidetischen Anlage im Jugendalter. *Zsch. f. Psychol.*, 1921, 87, 91.
69. JAENSCH, E. R., and REICH, F., Ueber die Lokalisation im Sehraum. *Zsch. f. Psychol.*, 1921, 86, 278.
70. KATZ, D., Der Aufbau der Tastwelt. *Zsch. f. Psychol., Ergänzungs.*, 11, 1925.
71. KIESOW, F., Si verificano nei bambini e nei fanciulli immagine consecutive contrarie? Contributo allo studio dei fenomeni eidetici. *Arch. ital. psicol.*, 1924, 3, 121.
72. KIESOW, F., Zur Kritik der Eidetik. *Arch. f. d. ges. Psychol.*, 1925, 53, 447.
73. KIESOW, F., Zur Kritik der Eidetik. *VIIIth International Congress of Psychology*. Groningen: Noordhoff, 1927. Cf. p. 317. *Arch. ital. psicol.*, 1925, 4, 79.
74. KIESOW, F., and GATTI, A., Nuove osservazioni sui fenomeni eidetici.

75. KIREK, H., Ueber die Bedeutung der sensoriellen Veranlagung für die Bildung von Objektvorstellungen, insbesondere auch bei Eidetikern. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1926, 9, 182.
76. KIREK, H., Die Bedeutung der sensoriellen Veranlagung für die Bildung von Objektvorstellungen, insbesondere bei Eidetikern. *Zsch. f. d. Behdlg. Schwachsinn.*, 1926, 46, 121.
77. KLÜVER, H., Description of Eidetic Phenomena. *Psychol. Bull.*, 1925, 22, 331.
78. KLÜVER, H., An Analysis of Recent Work on the Problem of Psychological Types. *J. Nerv. & Ment. Dis.*, 1925, 62, 561.
79. KLÜVER, H., An Experimental Study of the Eidetic Type. *Genetic Psychol. Monog.*, 1926, 1, 71.
80. KOFFKA, K., Ueber die Untersuchungen an den sogenannten optischen Anschauungsbildern. *Psychol. Forsch.*, 1923, 3, 124.
81. KOFFKA, K., Ueber die Messung der Grösse von Nachbildern. *Psychol. Forsch.*, 1923, 3, 219.
82. KOLLATH, W., Ueber das Purkinjesche Phänomen. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1922, 7, 140.
83. KRELLENBERG, P., Ueber die Herausschärfung der Wahrnehmungs- und Vorstellungswelt aus der originären eidetischen Einheit. *Zsch. f. Psychol.*, 1922, 88, 56.
84. KRETSCHMER, E., *Medizinische Psychologie*. Leipzig: Thieme, 1926.
85. KRÖNCKE, K., Zur Phänomenologie der Kernfläche des Sehraums. *Zsch. f. Sinnesphysiol.*, 1921, 52, 217.
86. KROH, O., Eidetiker unter deutschen Dichtern. *Zsch. f. Psychol.*, 1920, 85, 118.
87. KROH, O., Subjektive optische Anschauungsbilder bei Jugendlichen. *Zsch. f. päd. Psychol.*, 1922, 23, 40.
88. KROH, O., *Subjektive Anschauungsbilder bei Jugendlichen*. Eine psychologisch-pädagogische Untersuchung. Göttingen: Vandenhoeck & Ruprecht, 1922. Pp. viii + 195.
89. KROH, O., Die eidetische Anlage bei Jugendlichen. *Zsch. f. Kinderforsch.*, 1924, 29, 63.
90. MÜLLER, G. E., Zur Analyse der Gedächtnistätigkeit und des Vorstellungsverlaufs. *Zsch. f. Psychol., Ergänzungs.*, 5, 8 and 9.
91. NOLL, A., Versuche über Nachbilder. *Psychol. Forsch.*, 1926, 8, 3.
92. PEAR, T. H., Modern Investigations of Mental Imagery. *Nature*, 1925, 115, 853.
93. PEAR, T. H., The Relevance of Visual Imagery to the Process of Thinking. I. *Brit. J. Psychol. (Gen. Sect.)*, 1927, 18, 1.
94. QUERCY, P., Les idéités. *J. de psychol.*, 1925, 22, 801.
95. QUERCY, P., Recherches sur l'idétisme. *J. de psychol.*, 1926, 23, 702.
96. SCHILDER, P., Psychoanalyse und Eidetik. *Zsch. f. Sex.-Wiss.*, 1926, 13, 56.
97. SCHROFF, F., Vorläufige Mitteilung über die Wirkung der Suggestion auf Nachbilder. *Psychol. Forsch.*, 1926, 7, 260.
98. SCHWAB, G., Vorläufige Mitteilung über Untersuchungen zum Wesen der subjektiven Anschauungsbilder. *Psychol. Forsch.*, 1924, 5, 321.
99. SCOLA, F., Ueber das Verhältnis von Vorstellungsbild, Anschauungsbild und Nachbild. *Arch. f. d. ges. Psychol.*, 1925, 52, 297.

100. SCOLA, F., Zur Theorie der eidetischen Phänomene. *VIIIth International Congress of Psychology*. Groningen: Noordhoff, 1927. Cf. p. 410.
101. STERN, W., Ueber verlagerte Raumformen. *Zsch. f. angew. Psychol.*, 1909, 2, 498.
102. TRIPP, E., Observations sur l'image eidétique. *Arch. de psychol.*, 1926, 20, 53.
103. WARREN, H. C., Some Unusual Visual After-Effects. *Psychol. Rev.*, 1921, 28, 453.
104. WERNER, H., *Einführung in die Entwicklungspsychologie*. Leipzig: Barth, 1926. Pp. vi + 360.
105. WITTMANN, J., Ueber das Gedächtnis und den Aufbau der Funktionen, eine experimentelle Untersuchung über das An- und Abklingen der Reproduktionen taktiler, akustischer und optischer Eindrücke. *Arch. f. d. ges. Psychol.*, 1923, 45, 203.
106. ZEMAN, H., Verbreitung und Grad der eidetischen Anlage. *Zsch. f. Psychol.*, 1924, 96, 208.
107. ZILLIG, M., Ueber eidetische Anlage und Intelligenz. *Fortschr. d. Psychol.*, 1922, 5, 293.

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108. BERINGER, K., Experimentelle Psychosen durch Mescaline. *Zsch. f. d. ges. Neur. & Psychiat.*, 1923, 84, 426.
109. BILLIGHEIMER, E., Ueber die Behandlung der Encephalitis epidemica. *Therapie d. Gegenw.*, 1925, 27, 466.
110. FISCHER, S., and HIRSCHBERG, H., Die Verbreitung der eidetischen Anlage im Jugendalter und ihre Beziehungen zu körperlichen Merkmalen. *Zsch. f. d. ges. Neur. & Psychiat.*, 1924, 88, 241.
111. GUTTMANN, A., Medikamentöse Spaltung der Persönlichkeit. *Monatssch. f. Psychiat. u. Neur.*, 1924, 56, 161.
112. HOEFFNER, T., Ergebnisse kapillarmikroskopischer Untersuchungen an 3100 Casseler Kindern. *Dtsch. Zsch. f. Nervenhk.*, 1926, 88, 218.
113. JAENSCH, E. R., Die typologische Methode in der Psychologie und ihre Bedeutung für die Nervenheilkunde. *Dtsch. Zsch. f. Nervenhk.*, 1926, 88, 193.
114. JAENSCH, E. R., and W., Einfache psychische Vorgänge und somatische Korrelaterscheinungen nach sportlicher Leistung und im Training. *Sitzungsber. d. Ges. z. Beförd. d. ges. Naturwiss. z. Marburg*, 1925.
115. JAENSCH, W., Ueber Wechselbeziehungen von optischen, cerebralen und somatischen Stigmen bei Konstitutionstypen. *Zsch. f. d. ges. Neur. & Psychiat.*, 1920, 59, 104.
116. JAENSCH, W., Ueber psychophysische Konstitutionstypen. *Verhandl. d. 33. Kongr. d. Dtsch. Ges. f. inn. Med., Wiesbaden*, 1921.
117. JAENSCH, W., Ueber psychophysische Konstitutionstypen. *Münch. med. Woch.*, 1921, 68, 1101.
118. JAENSCH, W., Ueber psychophysische Konstitutionstypen. *Monatssch. f. Kinderhk.*, 1921, 22, 401.
119. JAENSCH, W., Ueber psychophysische Konstitutionstypen. *Münch. med. Woch.*, 1922, 69, 965.
120. JAENSCH, W., Ueber psychophysische Konstitutionstypen. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1922, 7, 131.

121. JAENSCH, W., Ueber psychophysische Konstitutionstypen. *Zsch. f. d. ges. Neur. & Psychiat.*, 1925, **97**, 374.
122. JAENSCH, W., Ueber die Verbreitung eidetischer Phänomene und ihnen zugrunde liegender psychophysischer Konstitutionstypen (Reaktionstypen). *Klin. Woch.*, 1926, **5**, 406.
123. JAENSCH, W., Schwachsinn und Neurosen im Lichte psychophysischer Schuluntersuchungen. *Dtsch. Zsch. f. Nervenhh.*, 1926, **88**, 208.
124. JAENSCH, W., *Grundsätze einer Physiologie und Klinik der psychophysischen Persönlichkeit*. Ein Beitrag zur funktionellen Diagnostik. Berlin: Springer, 1926. Pp. x + 483.
125. JAENSCH, W., and WITTNEBEN, W., Archicapillaren, endokrines System und Schwachsinn. *Ber. ü. d. II. Kongr. f. Heilpädagog.*, München, 1924.
126. JAENSCH, W., and WITTNEBEN, W., Gesammelte Arbeiten zur Casuistik und Therapie von Entwicklungs- und Differenzierungsstörungen. I. W. Wittneben, Casuistik und Therapie archicapillärer Zustandsbilder bei Jugendlichen. *Zsch. f. Kinderforsch.*, 1926, **32**, 359.
127. KARGER, P., Die eidetische Anlage der Jugendlichen in ihrer Bedeutung für die Klinik und die Schulleistungen. *Klin. Woch.*, 1925, **4**, 2247.
128. KLOESS, W., *Psychophysisch-klinische Untersuchungen*. Dissertation: Frankfurt a. M., 1925.
129. KLÜVER, H., Mescal Visions and Eidetic Vision. *Amer. J. Psychol.*, 1926, **37**, 502.
130. LEVEN, Die eidetische Anlage der Jugendlichen. *Klin. Woch.*, 1926, **5**, 271.
131. LEVEN, Die eidetische Anlage der Jugendlichen. *Arch. f. Rassen- u. Gesellschbiol.*, 1926, **18**, 431.
132. LEWIN, L., *Phantastica. Die betäubenden und erregenden Genussmittel*. Berlin: Stilke, 1924. Pp. viii + 374.
133. MAYER-GROSS, W., and STEIN, H., Ueber einige Abänderungen der Sinnestätigkeit im Meskalinrausch. *Zsch. f. d. ges. Neur. & Psychiat.*, 1926, **101**, 354.
134. NEUHAUS, W., Makropsie und Mikropsie bei Basedowoiden. Ein Beitrag zur Konstitutionsforschung und Entwicklungsgeschichte. *Zsch. f. d. ges. Neur. & Psychiat.*, 1926, **105**, 257.
135. QUERCY, P., Auto-observation d'hallucinations visuelles. *J. de psychol.*, 1927, **24**, 520.
136. ROUHIER, A., *Le peyotl*. Paris. Pp. xii + 371.
137. SCHOLL, K., Intelligenzprüfungen an Schwachsinnigen bei Schilddrüsenfütterung. *Dtsch. Zsch. f. Nervenhh.*, 1926, **88**, 206.
138. ZAPPERT, J., Ueber Neurosen im Kindesalter. *Arch. f. Kinderhh.*, 1923, **73**, 108.

III

139. ABERCROMBIE, J., *Inquiries Concerning the Intellectual Powers and the Investigation of Truth*. London: Murray, 1860. Pp. xv + 344.
140. ALEXANDER, H. B., Some Observations on Visual Imagery. *Psychol. Rev.*, 1904, **11**, 319.
141. BAERWALD, R., *Die intellektuellen Phänomene*. Berlin: Ullstein, 1925. Pp. ix + 362.
142. BOIS-REYMOND, E. DU., Gedächtnisrede auf Johannes Müller. Berlin: *Kgl. Akad. d. Wiss.*, 1860.

143. BRIERRE DE BOISMONT, A., *Hallucinations*. Philadelphia: Lindsay and Blakiston, 1853. Pp. xx + 553.
144. BRODIE, B. C., *Psychological Inquiries*. London: Longman, 1855 (2d ed.). Pp. xii + 275.
145. BRODIE, B. C., *Mind and Matter: or Phyciological Inquiries*. New York: Wood, 1859. Pp. viii + 279.
146. BRODIE, B. C., *Psychological Inquiries. The second part*. London: Longman, 1862. Pp. xi + 247.
147. CARPENTER, W. A., *Principles of Mental Physiology*. London: Paul, 1896.
148. COOVER, J. E., *Experiments in Psychical Research*. Leland Stanford Junior University Publications. *Psychical Research Monograph*. 1917, 1, 411-438.
149. DOWNEY, J. E., An Experiment on Getting an After-Image from a Mental Image. *Psychol. Rev.*, 1901, 8, 42.
150. ERBECKE, U., *Die kortikalen Erregungen*. Leipzig: Barth, 1919. Pp. x + 305.
151. FECHNER, T., *Elemente der Psychophysik*. Leipzig, 1889.
152. FÉRÉ, C., Sensation et mouvement. *Rev. phil.*, 1885, 20, 337.
153. FISCHER, S., Kritische Musterung der neueren Theorien über den Unterschied von Empfindung und Vorstellung. *Zsch. f. d. ges. Neur. & Psychiat.*, 1921, 64, 260.
154. GALTON, F., *Inquiries into Human Faculty and Its Development*. London, 1883.
155. GOLDSTEIN, K., Zur Theorie der Hallucinationen. Studien über normale und pathologische Wahrnehmung. *Arch. f. Psychiat. u. Nervenhk.*, 1908, 44, 584, 1036.
156. GRUHLE, H. W., Psychologie des Abnormen. Cf. vol. III of Kafka: *Handbuch der vergleichenden Psychologie*. München: Reinhardt, 1922.
157. HABERLING, W., *Johannes Müller*. Leipzig: Akad. Verl., 1924. Pp. 501.
158. HENLE, F. G. J., Ueber das Gedächtnis in den Sinnen. *Woch. f. d. ges. Heilkd. (Casper)*, 1838, 18, 281; 19, 297.
159. HIBBERT-WARE, S., *Sketches of the Philosophy of Apparitions*. Edinburgh: Oliver & Boyd, 1825. Pp. 475.
160. JAMES, W., *The Principles of Psychology*. New York: Holt & Co., 2 vols., 1890.
161. JASPERS, K., Die Trugwahrnehmungen. *Zsch. f. d. ges. Neur. & Psychiat.*, Referate, 1912, 4, 289.
162. KANDINSKY, V., Zur Lehre von den Hallucinationen. *Arch. f. Psychiat.*, 1881, 11, 453.
163. KANDINSKY, V., *Kritische und klinische Betrachtungen im Gebiete der Sinnestäuschungen*. Berlin: Friedländer, 1885. Pp. 170.
164. KOFFKA, K., *Zur Analyse der Vorstellungen und ihrer Gesetze*. Leipzig: Quelle & Meyer, 1912. Pp. x + 392.
165. KÜLPE, O., Ueber die Objektivierung und Subjektivierung von Sinnes-eindrücken. *Phil. Stud.*, 1902, 18, 508.
166. LINDWORSKY, J., Wahrnehmung und Vorstellung. *Zsch. f. Psychol.*, 1918, 80, 201.
167. MACH, E., *Die Analyse der Empfindungen*. Jena: Fischer, 1922. Pp. xii + 323.

168. MARTIN, L. J., Die Projektionsmethode und die Lokalisation visueller und anderer Vorstellungsbilder. *Zsch. f. Psychol.*, 1912, **61**, 321.
169. MARTIN, L. J., Quantitative Untersuchungen über das Verhältnis unanschaulicher Bewusstseinsinhalte. *Zsch. f. Psychol.*, 1913, **65**, 417.
170. MARTIN, L. J., Ueber die Abhängigkeit visueller Vorstellungsbilder vom Denken. *Zsch. f. Psychol.*, 1914-15, **70**, 212.
171. MARTIN, L. J., Ghosts and the Projection of Visual Images. *Amer. J. Psychol.*, 1915, **26**, 251.
172. MEYER, G. H., *Physiologie der Nervenfasern*. 1843.
173. MÜLLER, J., *Ueber die phantastischen Gesichterscheinerungen*. Coblenz: Hölscher, 1826. Pp. x + 117. Cf. also *Klassiker der Medizin*, vol. 32.
174. MÜLLER, J., *Zur vergleichenden Physiologie des Gesichtssinnes des Menschen und der Tiere*. Leipzig: Cnobloch, 1826. Pp. xxxii + 462.
175. PARISH, E., *Hallucinations and Illusions, a Study of the Fallacies of Perception*. London: Scott, 1897. Pp. 390.
176. PERKY, C. W., An Experimental Study of Imagination. *Amer. J. Psychol.*, 1910, **21**, 422.
177. PICK, A., Historische Notizen zur Geschichte der Neurologie und Psychiatrie aus der englischen Literatur. *Zsch. f. d. ges. Neur. u. Psychiat.*, 1924, **91**, 233.
178. PURKINJE, J., *Opera omnia*. Cf. Betrachtungen und Versuche zur Physiologie der Sinne. Erstes Bändchen. Beiträge zur Kenntnis des Sehens in subjektiver Hinsicht. Zweites Bändchen. Neue Beiträge zur Kenntnis des Sehens in subjektiver Hinsicht. Praze: C. Calve, 1919.
179. RIEFFERT, J., Ueber die Objektivierung und Subjektivierung von Sinnes-eindrücken. *Ber. ü. d. Kongr. f. exper. Psychol.*, 1912, **5**, 245.
180. SCHILDER, P., Ueber Halluzinationen. *Zsch. f. d. ges. Neur. & Psychiat.*, 1920, **53**, 169.
181. SEASHORE, C. E., Measurements of Illusions and Hallucinations in Normal Life. *Stud. fr. the Yale Psychol. Lab.*, 1895, **3**.
182. SPECHT, W., *Wahrnehmung und Hallusination*. Leipzig und Berlin: Engelmann, 1914. Pp. vi + 147.
183. STAUDENMAIER, L., *Die Magie als experimentelle Naturwissenschaft* (2d ed.). 1922.
184. STUMPF, C., Empfindung und Vorstellung. *Abh. d. Preuss. Akad. d. Wiss.*, 1918, Philos.-Histor. Klasse.
185. URBANTSCHITSCH, V., Ueber den Einfluss einer Sinneserregung auf die übrigen Sinnesempfindungen. *Arch. f. d. ges. Physiol.*, 1888, **42**, 154.
186. URBANTSCHITSCH, V., Ueber die Beeinflussung subjektiver Gesichtsempfindungen. *Arch. f. d. ges. Physiol.*, 1903, **94**, 347.
187. URBANTSCHITSCH, V., Ueber Sinnesempfindungen und Gedächtnisbilder. *Arch. f. d. ges. Physiol.*, 1905, **110**, 437.
188. URBANTSCHITSCH, V., *Ueber subjektive optische Anschauungsbilder*. Leipzig und Wien: Deuticke, 1907. Pp. vi + 211.
189. URBANTSCHITSCH, V., *Ueber subjektive Hörscheinungen und subjektive optische Anschauungsbilder*. Eine psycho-physiologische Studie. Leipzig und Wien: Deuticke, 1908. Pp. iv + 123.
190. URBANTSCHITSCH, V., Ueber unbewusste Gesichtseindrücke und deren Auftreten im subjektiven optischen Anschauungsbilde. *Zsch. f. d. ges. Neur. & Psychiat.*, 1918, **41**, 170.

191. VRIES SCHAUB, A. DE, On the Intensity of Images. *Amer. J. Psychol.*, 1911, 22, 346.
192. WIGAN, A. L., *The Duality of the Mind*. London: Longman, 1844. Pp. xii + 459.
193. BERINGER, K., *Der Meskalinrausch*. Seine Geschichte und Erscheinungsweise. Berlin: Springer, 1927. Pp. IV+315.
194. BRESOWSKY, M., Ueber psychogene Halluzinationen. *Monatssch. f. Psychiat. u. Neur.*, 1926, 62, 31.
195. HENNING, H., Psychologie der chemischen Sinne. Cf. *Handbuch der normalen und pathologischen Physiologie*. Receptionsorgane. I. Berlin: Springer, 1926. Pp. XIV+1062.
196. WALKER, W., Ueber die Adaptationsvorgänge der Jugendlichen und ihre Beziehung zu den Transformationserscheinungen. *Zsch. f. Psychol.*, 1927, 103, 323.

SPECIAL REVIEWS

LARTIGUE, ALFRED, *Psychodynamique Générale*. Paris: Alcan, 1926.
Pp. iv + 138.

This book, as the author says in the preface, is an elaboration of various letters written by him to the French Academy of Sciences during the years from 1916 to 1920; he does not state, however, that he received any reply from the Academy. He is "convinced that the law of the *trimorpho-tricineti*c resonance is a universal law of demarcation for natural phenomena." It astonishes the reviewer that this law has not previously been heard of in France. The Germans have had it for a long time in the form of "Aller guten Dinge sind Drei." Let us quote from Lartigue: "translation, rotation and deformation in mechanics, neutrality, basicity and acidity in chemistry, solids, liquids and gases in the science of matter, birth, life and death in biology, etc., etc., etc." This law is supported by innumerable quotations from philosophers and men of science. The result is a universal theory of matter, mind and morality composing the world. The author strikes Du Bois-Reymond's famous "Ignorabimus" from the records of mankind. The reason why the undersigned accepted the review-copy of the book is because it is indirectly of interest to psychologists: that is, as a sample.

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MILLER, E., *Types of Mind and Body*. N. L.: Norton, 1927. Pp. 95.

The author has taken pains to emphasize the fact that a morphological study of form or structural function must begin and end with the vital capacities of a "living organism"; and that such classification as is made by the scientist is for the sole purpose of "handling his material in as economical a way as possible." Such classification is made of "an integrated dynamic system of forces which in its inheritance and its own history weave the fabric of personality." The constitutional and conditional factors thus considered represent "the Corporeal Complexion of the organism at the time of the investigation"; adding to this the "Psychological Personality" of the organism we have the "total personality."

Kretschmer's classification is used as a basis for the bodily factors. The Pyknic—compact, rotund and jocular, the "Type Digestif" or "Type Rond," and the "Asthenic"—lengthy, serious,

and lacking force, the "Type Respiratoire," each with several subdivisions of growth abnormalities, and intensive developments, are the scientific contributions to date.

The psychological background is developed in terms of the "active principles of the endocrine glands" from the biological and chemical viewpoints. Neurological, metabolic and psychological factors are the three possible divisions, integrated in one indivisible organism. Kraepelin's twofold division of manic-depressive and schizophrenic are accepted as the extremes, and the entire human race placed "between" them. An added terminology defines these types; the cyclothymes with a periodic or cyclic change of mental activity and attitude largely characteristic of the pyknic type, and the schizophrenic, with a decidedly divided or split form of mental activity and attitude, largely characteristic of the asthenic type.

These types noted almost entirely in extreme cases cause the author to speak of the normal type as the syntonie, and as such characterized by a normal balance externally with his environment, and internally with his *self*.

If one is in the least apprehensive of a too great simplification, the chapter "Cross-Currents" will thwart the ambitions of any novice. The author clearly indicates that with due consideration for the constitutional characteristics of human development the greatest emphasis must be placed upon variations in types of body, and more so in the types of mind which arise in the individual development. Accepting the work of Freud as his basis, the greatest variabilities are indicated in the surging "instincts" and the conflicts" caused by constantly thwarting environments.

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SPEARMAN, C., *The Abilities of Man, Their Nature and Measurement*. N. Y.: Macmillan, 1927. Pp. viii + 415, with appendix.

This is the volume promised by the author in his previous book, "The Nature of Intelligence." It develops further Spearman's well-known theory of intelligence and is concerned very specifically with the actual results of intelligence testing. It is not a general survey of what has been done in the field of intelligence testing, but a well-rounded presentation of a theory of intelligence.

The first part of the book sets forth the various doctrines of intelligence and they are cleverly grouped under "monarchic," "oligarchic," "anarchic" and so forth. All of the rival doctrines are haled before the judge, severely brought to task for their short-

comings, and promptly condemned, some perhaps a trifle summarily. The history of the doctrine of two factors is then presented. The doctrine itself is explained at length and the hypothesis of mental energy is shown to be exactly what is wanted to explain the general and specific factors.

The second part of the book brings together what the author calls the fundamental facts. He draws widely upon experimental work done in his own laboratory and elsewhere, and applies the criterion of tetrad differences to many tables of correlations. The relation of g to other psychological processes leads the author to postulate three other general factors or "functional unities." These are general mental inertia otherwise known as perseveration; the facility of recuperation or the oscillations of mental efficiency; and lastly a conative factor such as self-control. Individuals may differ in g or quantity of mental energy, or again in inertia or the ability to shift from one set of neurones to another, or again in the amplitude of the oscillations from minimal to maximal energy.

This rough sketch cannot pretend to do justice to the theory as carefully worked out by the author. It may give a faint idea of its all-embracing character and its fascinating qualities. There is no other comprehensive attempt to formulate a theory of intelligence as far-reaching as this. The author has worked persistently at it since 1904 and it has now reached its present imposing extent. Although there has been much criticism of this theory and there will be more in the future, there can be no doubt whatever that it will leave its lasting mark for good on the technique and theory of intelligence testing.

R. PINTNER

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POFFENBERGER, A. T., *Applied Psychology. Its Principles and Methods*. N. Y.: Appleton, 1927. Pp. vii + 586.

Someone has recently suggested that it might be of value to chart our present scientific knowledge in relationship to the areas about which we are still ignorant. In this fashion we might get something similar to an ancient "map of the known world." It would help tell us where we are making progress and where we are falling short. We might for example locate a certain narrow strip along some coast and know considerable about it. If important changes kept taking place in this narrow strip in an inexplicable way—if people appeared and disappeared mysteriously from our known region—we would want to organize an expedition into the

area beyond. A series of charts kept over a period of years would be extremely valuable.

Something of this sort has been done for the field of psychology by Dr. Poffenberger in his book *Applied Psychology. Its Principles and Methods*. It is not a complete map of course and leaves many things to be desired but the author has succeeded in giving a very readable account of some of the principles of psychology and their application to such fields as business, law, medicine, education, and industry. For all those who want in one volume an idea of what psychology is doing in these fields of human endeavor, this book should be useful. It is excellently written, an accomplishment not always accompanying scientific attainment.

There may be some doubt as to whether Applied Psychology can be taken to represent the field of psychology. The author defines the field of Applied Psychology "to be every situation in which human behavior is involved and where economy of human energy is of practical importance." He has thus provided himself with a pass to every part of the psychological world.

Specialists in various fields will express dissatisfaction with the treatment of their particular territory. Workers in the field of education will find fault with the brief chapter dealing with the applications of this phase of human activity. There are a number of possible explanations. In the first place one might define education in terms of life and then most everything would become applications to education. A more reasonable explanation, however, is the wealth of material elsewhere available and the author's specific interests in other directions.

It may well be an open question as to whether it is possible to give a helpful survey of the various fields in such a short space. On the whole it is probably desirable to try and if the reader feels inclined after a survey of the whole field to search further in any particular realm, he can go to specific references for that subject. He should be guided by further references to which he may turn, a matter in which the present volume is lacking. The book might also be helped by collecting and organizing the references used in the text as well as leaving them scattered through the various pages.

The organization of material, an inheritance from the previous volume by Hollingworth and Poffenberger, may be questioned. The survey of the field is approached from two points of view as indicated from the sub-title but the coördination between the two is weak. It is as though in making a chart of psychology-land (or sea) the author had first gone through and described the soil, the minerals,

the rocks, the water, etc., in a systematic fashion but almost nowhere ever saying anything about the relation of these things to particular areas to be described later. Then he comes back and beginning on a fresh sheet (Part II) he tells about some things in each of the areas but nowhere saying very much about the elemental factors.

This failure to relate principle and method is nothing unusual—in fact it is all too common. On the whole Dr. Poffenberger has done better than most other writers. Part of the difficulty is due to the fact that psychologists are not sure just how principles and methods are to be related. It is also due to the fact that for people who long have worked in a particular field, the materials become organized in ways which are incomprehensible to others. If this book were designed only for members of the American Psychological Association, the problem would be less serious, but the majority of readers are going to be college students and laymen with little or no psychological background. Unless these readers are guided and helped in relating the abstract facts about learning, thinking, heredity, sex differences, etc., to the problems of industry, business education, etc., most of the abstract facts will remain in their own compartments and the problems in theirs.

The growth of information in psychology can be judged by comparing the present volume with the earlier volume by Hollingworth and Poffenberger. Undoubtedly the areas of the known world are larger. It is not always easy to tell just what is rock and what is sand, but the author himself has been very careful in drawing his conclusions. A chapter might well be added to indicate the fields in which work is still to be done. Politics, social service, religion, recreation, etc., are other fields of human activity of great importance and ones which well might come within the scope of the author's definition of his field.

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GIESE, FRITZ, *Methoden der Wirtschaftspsychologie*. Berlin N 24: Urban & Schwarzenberg. Pp. 744.

Giese has prepared this discussion of psychology in industry as one of the volumes of *Das Handbuch der Biologie*. The topics treated cover a wide range, including the questionnaire, statistics, time and motion study, the effects on the worker of such things as fatigue, ventilation, and the like. Descriptions of apparatus occupy a prominent position in the book and are supplemented by 251 illustrations. Forms for keeping records are also copiously furnished.

An idea of the variety of the subjects covered may be gained from the fact that the author has even included a section on the applications of racial psychology to industry. As is customary in Europe, industry is interpreted as including the processes of production as well as those of distribution. Accordingly, in this treatment of industrial psychology is included a treatment of advertising and selling.

An American reader will observe in this book, as in most other European publications, a regrettable disregard of American technical literature. The few American books and reports that are cited are for the most part out of date. German industrial psychologists still hark back to Münsterberg. It is easily understood that this lack of acquaintance with modern American literature comes from the inability of scientific workers to buy the tremendous number of publications coming from the United States. A perusal of such a volume as this increases one's desire that some way may be devised whereby international exchanges of scientific publications can be facilitated.

H. D. KITSON

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CAMPBELL, CHARLES MACFIE, *Delusion and Belief*. Cambridge: Harvard University Press, 1926. Pp. 79.

A general interpretation of abnormal psychological phenomena underlies the suggestive and fascinating book of Professor Campbell. The analysis of delusion and belief is biological and brings to bear the criterion of success or failure of adjustment to environment. Experience calls forth emotional reactions which color the beliefs; one's stock of beliefs (and delusions) is shaped by the nature of the desires for the fulfilment of wants. The author's conception is formulated in pragmatic and instrumental terms; for him "beliefs are the tools of life." The theory of belief as a means to control environment is illustrated in the after-effects of some of the critical periods of life as bereavement, unsatisfied love and childlessness.

When the means for putting into play one's abilities, capacities, and interests are lacking the individual is unable to adjust himself properly or adequately and may take refuge in delusions about supposed achievement or attainment of the wished for goal. When reality fails to requite one's desires then it is that delusions may result, depending inversely upon the amount of insight into "the deep human conflicts." Delusions are nature's compensations for some unremediable inferiority and are regressions to primitive modes of adaptation to life. The thought of the primitive man was slightly intellectual and largely emotional as pointed out by Lévy-Bruhl, to

whom the author refers. Delusions are interpreted as the consequence of the normal unfulfilment of the deep feelings aroused by emotional situations. The present reviewer would suggest that Professor Hollingworth's theory of Redintegration be linked up with the author's observations of the close relationship between emotional desires and delusions. This linkage would result in an empirical description of the genesis of delusions valuable as a theory and as an instrument for further research. Professor Campbell sees in modern mentality an underlying primitive strain which "has not withdrawn thought and feeling and will from the nature that surrounds," for he believes that "beneath the surface of our conscious life, with its logical canons and its insistence on causality, primitive man still lives out his communion with nature, . . . Caliban may seldom be allowed to roam above the surface, but when special stresses weaken his restraining bonds, he may again appear in the open." From the doctrine of redintegration it could be said that the "crude totem beliefs of primitive man" and the delusions of a twentieth-century individual both are explicable as redintegrations on the autonomic or emotional level synchronous with the breakdown of reactions on the cortical level.

Education of people is urged for correcting undue leaning to beliefs about health which may become so widespread as to become detrimental to modern medical science. Toleration of beliefs is urged, as there is no ideal method of adjustment to life embodied in any one system of beliefs. There is a natural tendency for a diversity of beliefs. Beliefs that are not adequate socially must be supplanted by other more wholesome beliefs.

Professor Campbell concludes his analysis with the suggestion that a critique of the beliefs of an individual or a nation would refreshen the vitality of a civilization and inadequate international adaptations to the complex needs of modern life such as was responsible for the World War would become impossible.

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STARCH, DANIEL, *Educational Psychology*, Revised edition. N. Y.: Macmillan, 1926. Pp. ix + 568.

How does this book differ from the well known, widely used volume published in 1919? Ninety per cent of the material is word for word reproduction. The most extensive addition is a chapter on Mental Hygiene, summarizing in eleven pages Thom's list of "Don'ts," Burnham's principles of effective mental hygiene, and

Morgan's suggestions to teachers. In ten other chapters additions have been made varying from a paragraph to several pages. These additions present the modern point of view which objects to instincts; the usefulness of classification and other methods of adjusting to individual abilities; group intelligence tests; performance tests; Thorndike's investigations on transfer and mental discipline; and some of the data obtained since 1918 by such men as Buswell, Gray, Trabue, Woody, Washburne, and Horn on the special school subjects. It is odd to find in discussions and bibliography no mention of the research contributions in this field by Otis, Germane, Gates, or H. O. Rugg.

GOODWIN B. WATSON

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WALLIN, J. E. W., *Clinical and Abnormal Psychology*. A Textbook for Educators, Psychologists and Mental Hygiene Workers. Boston: Houghton Mifflin, 1927. Pp. 649.

The author has very decided views as to what clinical psychology is, what it should attempt to do and what the proper training for a clinical psychologist should be. Drawing from his long and wide experience as a clinical psychologist, his book is packed with information of value. But it is a heavy book. It is too well packed. There is too much in it. The author has attempted to omit no detail and hence at times the general presentation is spoiled. He has evidently a *penchant* for technical terms, and so we meet rhotacism, lambdacism, dysarthria, aphemia, echopraxia, hemianaesthesia and many others, not to mention flocks of "hypos" and "hypers."

Part I discusses general clinical methods, aims and principles. Part II is called "Intelligence"; Part III, "Motility"; and Part IV, "Emotivity." Under "Intelligence," all the usual methods of measurement are discussed, as well as all the special tests dealing with sensitivity, memory, attention and the like. There are also chapters on the disorders of sensibility, attention, memory and so on. The book will be of decided value to the student of clinical and abnormal psychology.

R. PINTNER

Teachers College, Columbia University

BRONNER, A. F., HEALY, W., LOWE, G. M. AND SHIMBERG, M. E., *A Manual of Individual Mental Tests and Testing*. Boston: Little, Brown, 1927. Pp. x + 287.

This is a manual of individual tests which might prove useful in clinical work. Individual tests are to be distinguished from scales

of tests, such as the Binet Scale, and also from group tests. The book, therefore, brings together a number of tests which have been somewhat neglected of late. The authors are to be congratulated on performing a very useful service for psychologists. They stress in their introduction the necessity for a broader use of tests in the psychological examination and this manual will certainly help to achieve this end, because it brings to our attention many tests that are not readily accessible, buried away in articles and reports.

Their aim has been "to include every adequately standardized test." One might easily cavil at the "every" and the "adequately," but such criticism is petty, in view of the whole achievement of the book. There are 95 adequately standardized tests, and to these are appended 30 inadequately standardized ones. The authors, themselves, have included many standardizations hitherto unpublished.

The tests are divided into five categories: (1) Language and Ideational; (2) Memory and Learning; (3) Mechanical and Assembly; (4) Form Board and Construction Board; (5) Other Non-Language Tests. There is a section called "Interpretation of the Tests," consisting of comments of various kinds arising out of the wide clinical experience of the authors. A bibliography of 319 titles completes this very useful book.

R. PINTNER

Teachers College, Columbia University

BUHLER, CHARLOTTE, HETZER, HILDEGARD & TUDOR-HART, BEATRIX, *Soziologische und Psychologische Studien über das Erste Lebensjahr*. Jena: Gustav Fischer, 1927.

Three sections comprise this publication. The first deals with the first social reactions of children and is based on Dr. Charlotte Bühler's experiments at the La Salle Street Diet Kitchen in New York during her recent visit to this country. Her method was to place two babies together, face to face, in a play pen and observe them for ten minutes. Toys were given them and their responses to toys, to each other, and to the observer were carefully noted. In all 114 children were studied, equal numbers of boys and girls. The age range was from three months and twenty-eight days to one year and ten months. Children of four months looked at each other, handled the toys, often smiled at each other and sometimes accidentally touched each other but never seemed to definitely seek anything more than "sight" contacts. In the second half year, much "touch" contact was displayed. Most of the children patted each other's faces and took toys from each other. Some displayed

"rivalry" and "despotism" toward children younger than themselves. The author concludes that by the end of the first year the child is "a primary, positively, socially oriented being."

The second part of the book deals with the earliest reactions to the human voice. The experiments were made in the Vienna clinics and Children's Homes. Babies from three days of age to four months were subjected to "loud" and "soft" noises and to the human voice. The findings showed that the newborn babies reacted to all kinds of auditory stimuli, but more markedly to artificial sounds and noises up to about the second or third week. Thereafter the human voice proved a much more effective stimulus.

The third section presents an inventory of behavior activities of the first year of life, based on continuous twenty-four hour individual observations of sixty-nine children.

The studies seem to have been undertaken in a very scientific spirit and to have been very carefully conducted. Dr. Bühler recognizes that there is need of developing a better technique for observation of the constantly active infant. She feels that more measures that are extremely objective, such as motion picture apparatus, are desirable. She has surely opened up many fields for further investigation and has thrown a great deal of light on the early reactions of infants to social situations. The book is clearly written and is interspersed with interesting pictures and several tables.

LUCILE MARINE

Teachers College, Columbia University

LAGUNA, THEODORE DE, *The Factors of Social Evolution*. N. Y.: Crofts, 1926. Pp. x + 362.

Until rather recent times sociology, cultural anthropology and psychology have proceeded, in their development, more or less independently of each other. Sociology was largely concerned with metaphysical and theoretical considerations. Cultural anthropology, under the fortunate and able leadership of Boas in this country, of Haddon, Marett, and Rivers in Great Britain, and under Durkheim, Graebner, Schmidt, Nordenskiöld and others on the Continent has freed itself from the older evolutionary and purely classificatory systems and has become a more objective science. Psychology, for its part, has been emancipating itself from philosophy, especially latterly from the last vestiges of Cartesian considerations. It has developed an experimental and statistical method of approach which is just now beginning to bear fruit. Since each of these sciences has gone on its way alone, there has often been a regrettable lack of

awareness of mutual relationships and of the need for some sort of synthesis at those points where the fields of each science distinctly touch one another. Today this *rapprochement* has begun.

The present book is a valuable contribution toward the integration of various phases of these three sciences. Although its principal emphases lie rather on the sociological and anthropological side, its standpoint should not be ignored by those psychologists who would make their science touch the more vital features of actual human behavior. The author, who is a professor of philosophy, has ranged widely in his reading over the fields of social theory, sociological and anthropological investigations, culture history, and social psychology.

The volume is divided into two major parts, the first containing five chapters dealing with the general characteristics of the process of social evolution, the latter containing nine chapters portraying in some detail the factors of social evolution. The final chapter summarizes the standpoint and projects for us the larger meaning of the whole problem.

The opening discussion hinges around the question of the reality of society. Is there any need to consider social data in terms of the group or society as a unit? The author believes there is and gives sound reason and example to show why. Secondly, what is the meaning of social evolution? The author indicates the biological analogy which is the basis of this idea and then proceeds to show why we should study social continuities. He does not confine himself by any means to the simple thesis of Spencer or L. H. Morgan that societies everywhere must inevitably pass through certain uniform stages of development, but accepting the theory of the Boas School (if we may call the present generation of American historical ethnologists "a school"), he shows the importance both of invention and diffusion in the course of social change.

Part II opens with a consideration of the limiting but originally important place of geographic and racial factors in social evolution. However, neither race nor geography alone, nor yet both together, will account for social change. Only by a recognition of the cultural factors can we account for the development of society beyond its crudest stages. Professor de Laguna writes:

"If without dogmatism we endeavor to draw a general conclusion from the facts before us, it is this: That in its earliest stages social evolution may well have been dependent upon organic modification; but that the farther social evolution advances the less need it has to wait upon changes in the organism. . . . It is folly to look to

improvement in the race for the explanation of any part of this advance."

In short, it is to the study of culture not of race or geography that we must turn if we are to comprehend the meaning of social ongoing.

The material culture and economic life are first reviewed and the course of this development both by independent invention and by diffusion is traced. The illustrative matter, here as elsewhere in the volume, is chosen from primitive and modern peoples, with the bulk of the examples from our own historical sources of Western Europe and America.

Then the author traces the development of human thought in two chapters which comprise an excellent review of the growth of intelligence from primitivity down to the present day. The close relation of cultural advance and intellectual advance is shown. Intelligence is not some divine gift or a mere product of biological variations as some mental testers imagine. It is quite as much a social (cultural) product as it is a biological one. The examples from the history of science are particularly appropriate.

The next three chapters, which complete the argument of the book, deal respectively with coöperation and the division of labor, the relation of improvement of communication to social coöperation, and with the main features of social organization. The close interrelation of modern complex society with its high degree of interdependence of social units depending upon coöperation, division of labor and rapid means of communication is very ably shown. Although much of this material is discussed in Cooley's *Social Organization*, written nearly twenty years ago, the present writer has done well to tie it up with his larger thesis of social evolution.

Throughout his book the author points out, in a wide range of connections, the interrelation of culture patterns to modes of personal thought, attitude and action. He shows the social nature of our thinking, the importance of speech and communication in the mental processes of man—features too frequently lost sight of or ignored by the laboratory psychologists. The following quotation from the final chapter summarizes the author's main thesis:

"Social activity is intercourse and it develops through intercourse. Hence the forms and instrumentalities of communication and exchange are fundamental conditions for the whole evolution of culture. To facilitate exchange is to stimulate the division of labor and the specialization of proficiency. To improve the means of communication is to liberate and enrich the human mind. And the structure of society itself, which in the main determines the effective contacts between individuals and directs not only the spread of ideas but the

flow of sympathy as well, remains a never to be neglected factor in every transformation."

While it will be recognized by the careful student of recent developments in anthropology, sociology, social psychology and philosophy that there is nothing distinctly novel in this standpoint, the volume serves the timely purpose of integrating these fields for the student and the general reader. Especially does the reviewer recommend this book to those social scientists or psychologists who are still handicapped by the atomistic, individualistic hypothesis of a previous generation.

KIMBALL YOUNG

University of Wisconsin

WELLS, F. L., *Mental Tests in Clinical Practice*. Yonkers: World Book Co., 1927. Pp. x + 315.

The number of books dealing with mental testing in some manner or other that have appeared during the last few years is evidence of the many uses to which mental tests have been put. Here is a book different from all the others. It describes the use of tests in clinical work and is written by one of the best authorities in the field. It is splendidly done. One can almost see the author at work in his clinic. He goes into great detail about test procedure, manner of giving, manner of scoring, because he has experienced such problems as important in his work. He is meticulous in his discussion of office procedure, as when he tells us the relative merits of the "Gem," the "Owl" and the "O.K." clips, because he knows how all these little details add up to make an efficient office.

There are chapters on the Stanford and Kuhlmann Scales with many new suggestions for the clinical psychologist. He favors wide range testing from a basal year to a complete year failure. Grouping the tests saves tedious repetition of instructions. At times he would seem to go beyond the actual words laid down by the manual, as in the interpretation of pictures, the substitution of "nicest" for "prettiest" in V-3, and so on. Again on the vocabulary, Wells' procedure is not quite clear, and rather a narrow range is implied. These and many other details may seem insignificant to the general reader, but the mental tester soon learns their importance. Differences between testers in such things mean differences in I.Q. of subjects. It is well, therefore, to have such a detailed account from a recognized clinical psychologist.

Particularly gratifying is it to see the importance and value attached to performance tests. Ordinarily the handling of performance tests in most clinics is very unsatisfactory. Frequently one,

and that often a poor one, is used and a mental age calculated, and then surprise is registered because it does not correlate better with a whole battery of tests such as the Binet Scale. Wells brings out the necessity for using a battery of performance tests and he does not naively expect them to duplicate what the Binet has already measured.

There are excellent chapters on memory examination for psychotic cases and on the practical use and value of the free association method. Particularly helpful to the student are the case studies following each chapter, attempting to show how the different kinds of tests take their place in the total description of a case. There is an adequate bibliography of 159 titles, as well as special references at the end of each topic.

The reviewer was puzzled by one practice described in the book, namely to assume age sixteen as average adult mental age for purposes of calculating the I.Q. and then to assume an I.Q. of eighty-seven as average for adults. This really means an assumption of thirteen years eleven months as average adult mental age on the Stanford. Then why not use thirteen, eleven or fourteen as the divisor, instead of having to interpret I.Q.'s differently for adults and for children. It would seem to the reviewer very confusing and undesirable.

R. PINTNER

Teachers College, Columbia University

BERNARD, L. L., *Introduction to Social Psychology*. N. Y.: Holt, 1926. Pp. x + 651.

This is the most voluminous text-book on Social Psychology which has yet appeared. The size of the work is chiefly due to the effort of the writer to be synthetic and thus to give due weight to as many of the current authors of similar works as could be incorporated. "It seems to the writer that the time has arrived when 'schools' of social psychology may properly be regarded as obsolete and the subject as a whole treated systematically." But the author regards social psychology as a subject that overlaps a very large portion of social science as well as of psychology and education. "This fact necessarily renders the content of social psychology voluminous."

Professor Bernard has succeeded quite well in incorporating into his discussion the essential point of view, as he sees it, of several of the well-known authors. It is perhaps impossible to incorporate them all into a single discussion, at least such an effort would have extended the limits of an already large volume. There is apparently no attention given to Znaniecki's *Laws of Social Psychology* and

the distinctive aspects of Dewey, Mead, and Thomas receive slight emphasis. The chief points of view which the work attempts to syncretize are those represented by the Behaviorists (including Allport), Tarde, Ross, Cooley, and McDougall, together with several cordial references to the work of Herrick in neurology and Child in invertebrate zoölogy.

The lack of accepted and tested methods of research in social psychology is a matter of concern to all who are familiar with writings in this field. Most of the discussions belong therefore to the literature of opinion. Men write from their knowledge of human life and present their conclusions with whatever of system and order they can summon, but both author and reviewer are largely confined to the expression of views, positions, and opinions rather than to any organization of proved conclusions or demonstrated facts. The author of a harmonizing text-book has the task of discussing his predecessors and showing his agreement or disagreement in whole or in part with their published work. His originality is achieved in his arrangement of the opinions of others in their ordered perspective.

Professor Bernard wishes to be considered a Behaviorist, and finds the concept of conditioned response indispensable in his discussion. He is not, however, an extreme behaviorist, for he has three chapters on consciousness, entitled respectively *The Forms of Consciousness*, *The Objects of Consciousness*, and *Pathological Forms of Consciousness*. The forms of consciousness include such non-behavioristic topics as feeling and cognition, while the objects of consciousness form a series beginning with self-consciousness and proceeding through physical consciousness to social, public, and collective consciousness.

The influence of Tarde and Ross is very apparent and quite cordially acknowledged by the author. There are two chapters on suggestion and four on imitation, in fact, imitation is set forth as the central concept in the organization of personality. Moreover, Part IV, entitled *The Psycho-Social Environment and the Organization of Collective Behavior*, has 170 pages which show strongly the influence of Ross' early work on social control. The influence of Cooley is acknowledged in many places, and some debt to Thomas appears, while the chapters on *The Foundations of Collective Behavior* show in the early part a strong sympathy with Behaviorism rather generously interpreted and conceived.

The general plan of the book is genetic, and proceeds from the discussion of the organic bases of behavior on through the essential

complications to the most abstract and intellectual aspects of institutional controls. The author has made an effort to be fair to those with whom he differs, and the reviewer thinks the effort was eminently successful. The method is essentially that of quoting with approval those parts of the conflicting systems that are usable and stressing lightly the positions which are not in harmony with the author's views. This gives an irenic character to the whole work which readers always find less irritating than sharp polemics.

The book furnishes an interesting and readable attempt to harmonize very divergent points of view and is commendably full in bibliographical references at the close of each chapter in addition to forty-five closely printed pages of supplementary bibliography at the end. The reviewer found the neologisms awkward and unwelcome, such as bio-social, neuro-psychic, and similar coinages, but these are perhaps to be regarded as symptomatic of the unrest which the Behaviorists' attack has brought about in the older terminology, and represent an effort to find something more neutral or more accurately descriptive.

ELLSWORTH FARIS

University of Chicago

WARDEN, C. J., *A Short Outline of Comparative Psychology*. N. Y.: Norton, 1927. Pp. 96.

In a very interesting manner, the author summarizes the points of view and the methods of the interest in animals and their reactions from the earliest times. Some account is given of the artistic and other remains of ancient man in so far as they concern animals. But little is to be found until we come to Aristotle, to whose writings Warden gives considerable space. The reviewer is impressed, as he is always, by the "modern" aspect of this great intellect. From Aristotle the decline was great and rapid and little was contributed by the later Greeks, the Romans and during the Middle Ages. Not until the 13th century does Albertus Magnus revive the interest in matters of this sort. And his contribution consisted primarily in rewriting Aristotle in a manner which would be acceptable to the Church. In the 16th century we find the general revival of scientific interest with Vesalius and Galen contributing primarily to the present topic. With Descartes an added impetus is given with the statement of the mechanistic point of view and the controversies which followed. Buffon is to be noted as contributing largely to the popularization of natural history and Leeuwenhoek to the discovery of lower animals through the invention of the microscope. But the Darwinian theory

gave the great impetus partly because it emphasized the observation within a restricted field rather than an encyclopedic view of all animals. Also the promulgation of this theory led away from the anecdotal method especially in the work of Loeb. This movement culminated in the introduction of the laboratory method by Thorndike and it has grown so that there are now "23 laboratories in the United States actively engaged in research, while animal experiments are carried out in connection with the general psychological work in almost as many instances." The latest advance has been on the theoretical side when Watson promulgates a systematic view divorced from metaphysical speculation and anthropomorphic interpretation and based on objective, quantitative data.

SAMUEL W. FERNBERGER

University of Pennsylvania

MALINOWSKI, BRONISLAW, *The Father in Primitive Psychology*. N. Y.: Norton, 1927. Pp. 95.

An exceedingly interesting account of the relations of the father in a family among the Trobriand Islanders with whom descent is matrilineal while marriage is partilocal. Among these islanders there is a good knowledge of anatomy and a complete ignorance of the physiology of reproduction. Hence the definition of the father is a social one,—as the husband of one's mother. The sole function of the father is that of mechanical dilation of the mother which, however, can also be accomplished by mechanical means. The legend built around conception involves a concept of reincarnation. The child is a rejuvenated spirit who has become tired of living in the spirit world and who returns to earth and who enters the body of some woman of the same clan. In this way is preserved the continuity of the maternal line. The details of pregnancy, such as the nausea in the early stages and the like, are taken account of in terms of this theory.

S. W. F.

WILLIAM E. RITTER (with the collaboration of Edna W. Bailey), *The Natural History of Our Conduct*. N. Y.: Harcourt, Brace, 1927. Pp. ix + 339.

Man's superiority to all of the other animals is to be found in his superior development of both hands and brain. The present volume takes up the question of the adaptation of all animals to environment. Our present knowledge of evolution is sketched. Most of the book is concerned with a recital of adaptations and maladaptations

of animals at many different points in the biological scale. Many very interesting experimental, observational and anecdotal examples are cited. The last several chapters are given to a discussion of man's adaptive behavior in which the maladaptations with regard to food taking among primitive peoples and with regard to sexual and reproductive activities among highly cultured human beings are stressed.

S. W. FERNBERGER

University of Pennsylvania

NINTH INTERNATIONAL CONGRESS OF PSYCHOLOGY

The Ninth International Congress of Psychology will be held at Yale University in New Haven, Connecticut, U. S. A., probably in August or September, 1929.

The officers of the Congress are as follows: President, J. McKeen Cattell of New York; Vice-President, James R. Angell of Yale University; Secretary, Edwin G. Boring of Harvard University; Treasurer, R. S. Woodworth of Columbia University; Foreign Secretary, Herbert S. Langfeld of Princeton University; Executive Secretary, Walter S. Hunter of Clark University; Chairman of the Program Committee, Raymond Dodge of Yale University; Chairman of the Committee on Arrangements, R. P. Angier of Yale University.

Besides these men the National Committee includes J. E. Anderson, University of Minnesota; Madison Bentley, University of Illinois; E. A. Bott, University of Toronto; H. A. Carr, University of Chicago; Knight Dunlap, Johns Hopkins University; S. W. Fernberger, University of Pennsylvania; William McDougall, Duke University; W. B. Pillsbury, University of Michigan; C. E. Seashore, University of Iowa; L. M. Terman, Stanford University; E. L. Thorndike, Columbia University; H. C. Warren, Princeton University; M. F. Washburn, Vassar College; R. M. Yerkes, Yale University.

This is the first meeting of the Congress in America. The previous meetings have been as follows: Paris, 1889; London, 1892; Munich, 1896; Paris, 1900; Rome, 1905; Geneva, 1909; Oxford, 1923; Groningen, 1926. It is expected that the Congress in the United States will be truly international in character. The Americans hope that the appointment of some foreigners for lecturers and lectureships can be arranged near the time of the Congress, so that foreign attendance can be increased and international solidarity within psychology furthered still more. Most appointments of this kind at American universities would have to apply only to psychologists who speak English.

NOTES AND NEWS

THE 36th annual meeting of the American Psychological Association was held at Ohio State University, Columbus, Ohio, on December 28, 29, 30, 1927. The registered attendance was 489 which breaks all previous records. Professor H. L. Hollingworth read his presidential address. Eleven sessions were held for the reading of formal papers; two sessions for informal reports by graduate students and three round table discussions. The officers elected for 1928 were:

President: Edwin G. Boring, Harvard University.

Council of Directors: Floyd H. Allport, Syracuse University; Karl M. Dallenbach, Cornell University.

Representatives on the Division of Anthropology and Psychology of the National Research Council: Harvey A. Carr, University of Chicago; H. L. Hollingworth, Columbia University.

Representative on the Social Science Research Council: Henry T. Moore, Skidmore College.

It was decided to hold the annual meeting for 1928 at Columbia University, New York City, on Thursday, Friday and Saturday, December 27, 28, 29, 1928. Dr. Henry A. Garrett was elected Local Representative and member of the Executive Committee.

At the recent meeting of the American Association for the Advancement of Science, Professor Howard C. Warren was elected Vice-President of Section I (Psychology) and Professor Truman L. Kelley was elected Vice-President of Section Q (Education).

DR. HARRY N. GARDINER, professor emeritus of philosophy at Smith College, was struck by an automobile on December 29 and died a few hours later. Dr. Gardiner was seventy-two years of age.

DR. KURT KOFFKA, formerly professor of psychology at the University of Giessen and now holder of the William Allen Neilson chair of research at Smith College, has arrived in the United States and has started his work at Smith College. Dr. Alexander Mintz, Russian psychologist, and Richard E. Hill will be Professor Koffka's research assistants.

THE main classroom building of the University of California at Los Angeles, when they move to their new site next year, will be called Josiah Royce Hall. This building is to contain a complete col-

lection of Royce's writings as a suitable memorial to his spirit. This Royce collection, when completed, will offer to the student a fuller and more intimate access to the thought of Royce than exists elsewhere. Professor Hugh Miller, of the Department of Philosophy, University of California, at Los Angeles, would welcome any information regarding the existence of works, addresses or articles by Royce now out of print.

ANTIOCH COLLEGE, Yellow Springs, Ohio, has appropriated \$350,000 for the erection of a Science Building in which psychology is to have three large rooms and seven small rooms.

At the September meeting of the British Association for the Advancement of Science held at Glasgow, Professor T. H. Pear was elected president of section J (Psychology).

THE close relation between psychology and language has recently been recognized both by psychologists and by linguists. It is therefore not without interest to psychologists that a Linguistic Institute will be conducted by the Linguistic Society of America, July 9 to August 18, 1928, at New Haven, using the facilities of Yale University. Courses will be of graduate character, emphasizing the linguistic rather than the literary side of the subject when they are concerned with individual languages. The administration of the Institute informs us that to its great regret it could not arrange a course in Linguistic Psychology; but most of the courses of general character will be valuable to linguistic psychologists. Of these, we note an Introduction to Linguistic Science, by E. Prokosch of Bryn Mawr; two courses in Phonetics, by G. O. Russell of Ohio State; Some Recent Theories of Linguistic Science, by K. Reuning of Breslau (Germany); Semantics, by W. Petersen of Florida; Linguistic Anthropology, by P. E. Goddard of the American Museum of Natural History in New York. All told, thirty-seven courses by twenty-three scholars, representing fourteen institutions of learning, make up this year's offering.

Circulars and information are to be secured from the Director of the Linguistic Institute, Prof. E. H. Sturtevant, Box 1849, Yale Station, New Haven, Conn. Intending students are asked to make a preliminary registration at the earliest possible date, to assist the Administrative Committee in arranging with the Yale Corporation for the use of buildings, etc.

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